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9 June 1983

# USSR Report

AGRICULTURE

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## USSR REPORT

## AGRICULTURE

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### UKRAINIAN MINISTRY OF AGRICULTURE INSTRUCTION ON SPRING SOWING

Kiev SIL'S'KI VISTI in Ukrainian 1 Apr 83 p 1

[Excerpts] After reviewing the progress of spring field work the UkrSSR Ministry of Agriculture notes that most farms prepared efficiently their seed, technology and fertilizer as well as chemical measures for plant protection and herbicides; they began timely and high quality agrotechnological measures to obtain the planned harvest in all crops. For highly productive use of technology mechanized complexes were formed for sowing early grain crops and also detachments for growing seed corn which employ almost 300,000 machine operators.

This spring again there are insufficient soil moisture reserves in southern rayons with a rapid temperature rise which may lead to an overlap in dates for sowing late and early crops. Therefore, measures to minimize soil tillage should be introduced widely. The basic requirement in the work fulfillment process should be maximum moisture preservation and a well loosened soil layer at the depth of seed covering. The numbers of times the soil is tilled, the depth and also equipment used should be selected in a differentiated manner depending on state of soil, field weed infestation, size of the area, predecessor and possibilities for the use of combined machines.

In the spring field work great importance should be attached to care of winter crops. Today, including fall top dressing, this work has been done on seven million hectares. Technology is being used productively on winter crops on farms in Crimean, Chernovitsy, Volyn and Transcarpathian Oblasts. Mineral fertilizer has been applied to almost all hectares. Winter crop top dressing is being completed in Zaporozhye, Lvov and Rovno Oblasts.

Agricultural aircraft pilots provide farmers with a great deal of assistance. But the most attention today should be given to root top dressing of winter crops by the Buznytskyy method when mineral fertilizer application into moist soil provides the greatest harvest increase. This agricultural measure should be used as widely as possible. To destroy weeds chemical crop weeding should be done over a considerable area.

The first to begin spring field work were farms in Odessa, Kherson, Crimean, Nikolayev and Chernovitsy Oblasts where early spring crops have already been sown. Farms in Zaporozhye, Transcarpathian, Ivano-Frankovsk, Donetsk and a number of other oblasts are almost finished with this work. Concurrently, farms in Voroshilograd, Poltava and Cherkassy areas are behind in their sowing.

This year, as never before, special importance is assigned to raising the corn yield since it is expected to increase the gross harvest. Because of reseeding of individual areas, the specific weight of this crop in the grain group is growing. Therefore, it is most important today to be well prepared for sowing: fields levelled, soil adequately fertilized and herbicides applied correctly. Sowing should be done within optimal dates with adherence to optimal plant density per hectare recommended for each zone. Utilizing water-treated and encrusted seed of better regionalized hybrids, corn, sunflower and soybean sowing may be started 7 - 10 days earlier than usual.

To provide livestock with early green feed more attention should be given to top dressing winter crops, rape, spear grass and perennial grasses first of all in farm area crop rotation. Thinned areas of perennial grasses should be thickened with oats, barley, crucifers; feed crop areas which perished should also be reseeded in time with multicomponent mixtures.

With today's conditions in mind it is essential to water winter crops and perennial grasses. Farms in Krym Oblast utilized all available means for this purpose. A cooperative effort in this respect was shown by kolkhozes and sovkhozes in Odessa Oblast who have already conducted moisture charging watering over an area of more than 4,000 hectares; generally, crops are irrigated here on more than 7,000 hectares. Work on watered lands is being started in Nikolayev, Kherson, Donetsk and other oblasts. Timely replenishment of soil moisture reserves will improve conditions for plant growth and development.

According to prognosis this year crops may be more infested with weeds so that all means of combatting weeds must be utilized. Along with herbicides, mechanical means should also be used. On a wider scale aircraft should be utilized for this work.

To increase the yield of grain pulse crops and perennial grasses--alfalfa and clover, seed for sowing should be worked with bacterial preparations especially rhizotorphine. This year it is expected to sow pulse crop seed worked with rhizotorphine over an area of 340-350 thousand hectares. Nitragine is used widely on farms in Chernigov, Poltava, Chernovitsy, Crimea, Kherson, Khmelnitskiy and Lvov Oblasts. At the same time, on farms in Voroshilovgrad, Vinnitsa, Cherkassy, Kiev, Kharkov and Sumy Oblasts the importance of this agricultural measure is underestimated and pulse crop working with bacterial preparations is hardly used.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### SOWING PLANS, PROGRESS, PROBLEMS IN UKRAINIAN SSR

Moscow SEL'SKAYA ZHIZN' in Russian 2 Apr 83 p 1

Article by S. Luzgan, Ukrainian SSR: "Sowing in the Ukraine"

Text The front of work out on the republic's fields is continuing to expand, with extensive use being made here of progressive technologies for the cultivation of grain and other crops.

As a rule, the farmers in the Danube and Black Sea steppe regions are the first to commence their field work. Nor is this year an exception. Reports are being received from the southern Ukraine indicating that many rayons and entire oblasts have completed sowing their early grain crops. By the end of March, spring crops had been planted on 4 million hectares, including sugar beets on 100,000 hectares. The planting of potatoes is in progress and the sowing of sunflowers is commencing.

Recently, I happened to visit the Volynye region. In this forest district, where the soil if you please is the poorest in the Ukraine, the grain yields have increased sharply in recent years. Last year, which was an extremely unfavorable one for many of the republic's oblasts, the plan for grain procurements in the Volynye region was fulfilled. A considerably greater yield of corn grain was obtained here than in the traditional zone of corn cultivation. Was this merely a random happening? By no means. At the present time, there is no other oblast in the Ukraine where so much concern is being displayed for lowering the acidity level of soils and where each hectare of arable land is provided with a generous top dressing of organic fertilizer.

Accompanied by the 1st secretary of the oblast party committee L.I. Palazhchenko, I visited fields in many rayons and in all areas it was a pleasure to view the healthy winter crops. On both sides of the road there were well arranged clamps of peat and manure composts and along the way we encountered lines of vehicles carrying organic materials.

"We are performing all of our tasks in a simple manner" commented Leonid Ivanovich, "and yet the truth is that if we wish to obtain twice as many products from the fields tomorrow, then we must provide them with four times more fertilizer today than we did yesterday. The fields will then become more generous and the herd will increase in size. The larger the herd -- the more organic material for applying to the land. This is the well known inter-dependence.

It bears mentioning that this year the Volynye region fulfilled its quarterly play for the procurement of livestock products ahead of schedule. This serves to further confirm this interdependence.

I make a phone call to Lutsk in order to obtain the latest information on the sowing work. The speaker at the other end is the secretary of the oblast party committee Z.S. Koval'chuk.

"Everything is going according to plan" he states over the phone.

"Everything is going according to plan" mainly owing to the fact that once spring made its appearance, brigades consisting of specialists from the agroindustrial association were created. They were headed by members of the bureau of the oblast party committee and the executive committee of the oblast soviet of people's deputies. These brigades studied the status of affairs on the spot and together with the kolkhoz and sovkhoz leaders, specialists and machine operators they determined: what work should be carried out, by whom and when, in order to be fully prepared for the spring work. Strict control was established in the interest of correcting all problems.

In accordance with the plan, efficient work is being carried out not only in the Volynye region. In connection with the fact that a portion of the winter crops was not sown owing to a deficit of moisture and some fields require resowing, a regrouping of the forces and resources was carried out in a timely manner throughout the republic. The decision was handed down to carry out the increasing volume of field work in a rapid manner and during the best periods. Only if this condition is met will it be possible to achieve success this year.

In Kazatinskiy Rayon in Vinnitsa Oblast a decision was made to compensate for the shortfall in winter crops by expanding the areas and raising the cropping power for the grain, barley and peas. The volume of spring work increased twofold. And here there are still only negligible supplies of moisture in the soil. In order to gain time and retain the moisture, each tractor is staffed with two machine operators. Towards this end, tractor operators engaged in other work and also 50 individuals from industrial enterprises were "mobilized." In addition, the decision was made to use wide-swath and multiple-operation units and also to mechanize auxiliary operations to the maximum possible degree. In all, 90 wide-swath sowing units were staffed.

"All of this is proceeding according to schedule" replied the chairman of the Kazatinskiy RAPO /Rayon Agroindustrial Association/ V. Koval', "owing to the use of these wide-swath units for the sowing and undersowing of grain crops, almost 50 tractors were made available for other work and a savings of 30 tons of fuel was realized. Even more important is the fact that the periods for the carrying out of urgent work have been reduced by one half."

This tested method is being utilized literally throughout the entire republic this year. It will make it possible to shorten the sowing campaign and retain the moisture.

The farmers are attaching special importance to applying a top dressing to the winter crop fields. On all of the weakened plantings, it has been carried out

on frozen and thawing soil: in the steppe region -- using mainly nitrogen fertilizers and in the forest steppe and forest district -- complete mineral fertilizers. An attempt is being made to apply a root top dressing to as many of the winter crops as possible; it will furnish a noticeable increase in yield. This work is either being carried out in an organized manner or it has already been completed in the Trans-Carpathian, Crimean, Chernovitsy, Kirovograd and a number of other oblasts.

Today practically all of the farms in the Ukraine are carrying out their field operations, many of which in the full sense of the word are being carried out simultaneously. A top dressing continues to be applied to the winter crops, the sowing of early grain and forage crops is in progress and the sowing of sugar beets is commencing. During this important period, the agricultural workers are literally economizing in the use of each hour in behalf of the future harvest. Thousands of examples could be cited underscoring the selfless work being performed by machine operators and sowing and irrigation personnel -- by those who today are deciding the fate of the crops.

At the same time, the agricultural ministries and departments and some oblast executive committees have not undertaken the measures required for eliminating the shortcomings in the preparations for and the carrying out of the spring field work. Repair work on a portion of the tractors and especially such powerful ones as the K-700 and T-150K and also irrigation equipment has not been completed in Kiev, Nikolayev, Odessa, Sumy, Chernigov and Kherson Oblasts. As yet, not all of the units have been staffed with machine operators, sowing machine operators or irrigation specialists. Some enterprises have failed to supply the rural areas with adequate quantities of spare parts and polyethylene film. The Southern and Lvov Railroads are not transporting fuel, mineral fertilizers or agricultural machines on a timely basis. These shortcomings must be eliminated without delay.

At a recent meeting of the aktiv of the republic's party organization, special emphasis was placed upon the following: in order to achieve the indicators planned for the five-year plan, it will be necessary as much as possible to fulfill the plans for the current year and increase substantially the rates of growth in gross agricultural output during the remaining 2 years. In solving this task, a great deal will depend upon how rapidly and skilfully the present sowing campaign is carried out.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### INDUSTRIAL TECHNOLOGY FOR CORN CULTIVATION IN UKRAINIAN SSR

Moscow PRAVDA in Russian 6 Apr 83 p 1

/Article by M. Odinets, Ukrainian SSR: "Concerns For and Return From Future Harvest"/

/Text/ The grain growers in Cherkassy Oblast are already prepared for sowing their corn. As early as autumn, they defined its place on the fields of their crop rotation plan, they prepared the soil, applied fertilizers and assigned all of the areas to teams and detachments. During the winter the machine operators studied the agricultural technique for growing this crop using an industrial technology.

Last year 43.1 quintals of corn grain were obtained here from each of 85,000 hectares. This year the plans call for the productivity of the corn plantations to be raised.

The introduction of the industrial technology has made it possible for the grain growers in the Ukraine to make better use of their corn potential. During a year's time, the gross yield of corn grain increased by almost twofold. Moreover, on those fields where the industrial technology was employed almost 11 more quintals of grain per hectare were obtained than in those areas where use was made of the conventional cultivation methods.

An interesting experiment was carried out at the Kolkhoz imeni Kirov in Mar'inskiy Rayon in Donetsk Oblast. For 7 years they have been growing corn with no expenditures of manual labor. Last year they obtained 82 quintals of grain from each of 464 hectares. This experience is being employed in many regions throughout the republic and yet it is not being used as intended in all areas. How else can one explain the fact that on many farms in Nikolayev, Odessa and Zaporozh'ye Oblast, where the industrial technology is also employed, the cropping power of the corn amounted to only 25-30 quintals of grain.

In some areas, reference is made to the fact that the low cropping power is caused by a shortage of herbicides. The farmers in Sumy Oblast have registered complaints in this regard and yet very little concern is being displayed for improving the fertility of the soil. The meagre dosages of fertilizer which are being applied to the soil are not producing the proper

effect. Here it is not out of place to mention the fact that the well known Trans-Carpathian twice-decorated Hero of Socialist Labor Yu. Pitra at the Za Nove Zhittyia Kolkhoz in Irshavskiy Rayon, in the interest of obtaining 120 quintals of corn grain, is applying 50-60 tons of compost to each hectare.

Among many specialists and farm leaders the opinion still persists that high yields can be obtained only with the aid of herbicides. Allow me to cite here the words of the chairman of the Bukovinskiy Druzhba Narodov Kolkhoz F. Kiprosha:

"We are convinced that this is not so. Herbicides, which are still in short supply, merely supplement the agrotechnical measures employed for combating weeds and do not replace them."

However, many farms are not making sufficient use of the conventional means. Last summer the weeds at the kolkhozes imeni Lenin, imeni Kirov and imeni Shevchenko in Peschanskiy Rayon in Vinnitsa Oblast literally choked out the corn seedlings. The result was immediately apparent. The Kolkhoz imeni Shevchenko obtained only 8.8 quintals of grain per hectare.

This year, according to information received from the Ministry of Agriculture, the republic's farms will grow grain corn on 2,400 hectares in the Ukraine. Moreover, it will be grown on 1,6 million hectares using the industrial technology. Approximately 13,500 teams have been created at the kolkhozes and sovkhozes and seed for early ripening and mid-season ripening hybrids has been brought in. Nevertheless the farms are experiencing a shortage of seed for highly productive corn varieties and hybrids that are resistant to weather fluctuations, pests and diseases.

The grain growers complain with regard to those responsible for creating the equipment. The pneumatic corn sowing machines available on the farms at the present time are of low productivity and cannot carry out precision sowing. The farms also require units for the preparation of chemical solutions, without which it is impossible to introduce the industrial technology.

Spring has come into its own. Field operations are unfolding on an increasing scale throughout the republic. The mass sowing of corn is about to commence. And so as to ensure that the busy period does not catch everyone unawares, the seed and equipment are constantly being checked. Last year the corn growers realized considerable progress. This year they plan to reinforce the successes already achieved.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### STATUS OF SEED PREPARATION WORK IN KIRGHIZ SSR DISCUSSED

Frunze SOVETSKAYA KIRGIZIYA in Russian 6 Feb 83 p 1

[Article: "Seed -- Tomorrow's Harvest". For related article see JPRS 83096, 18 Mar 83]

/Text/ February -- the last month of winter. Before very long the farmers will be moving out onto the fields for the spring sowing. The successful carrying out of this work requires almost 572,000 quintals of grain crop seed. On 1 February the kolkhozes and sovkhozes had 510,800 quintals -- 89.3 percent of the plan. Two thirds of this seed have been improved to the desired condition.

This year is the central one of the five-year plan. The farmers are ardently striving to ensure that it is a highly productive one. Their socialist obligations call for them to obtain from each hectare not less than 35 quintals of wheat, barley and oats, 55 quintals of corn grain and in this manner to make a worthy contribution towards implementation of the country's food program.

The farmers are placing high hopes in the spring grain and pulse crops, for which 344,000 hectares have been allocated. Naturally, each of them will produce a considerable increase in yield if 1st class seed is sown. The kolkhoz members and sovkhоз workers are hoping that this will be the case. Last autumn, during the grain harvesting operations, the farms in Chuyskiy, Issyk-Kul'skiy, Tyupskiy, Tonskiy, Basar-Kurganskiy and Talasskiy Rayons cleaned all of their seed, raised it to sowing condition and organized excellent storage. An inspection has revealed that the seed has a high germinative capacity.

Many farms in Issyk-Kul Oblast have organized their preparation of seed grain in a better manner than was the case last year. As a result of the correct use of their grain cleaning machines, they succeeded in improving all of their seed to the required purity. At the present time, the kolkhozes and sovkhozes have satisfied their requirements for certified seed to the extent of 120.2 percent.

The farmers in the Chu River Valley have achieved high rates in the preparation of their seed grain. More than 90 percent of the seed on farms in Issyk-Atinskiy, Kantskiy and Sokulukskiy Rayons is certified.

Nevertheless, this year the preparation of seed for spring is being carried out in a worse manner than last year. Compared to 1 February 1982 when for the republic as a whole 99.7 percent of the seed was certified, at the present time -- only 69.5 percent. An alarming situation has developed in Osh Oblast. Only 39.5 percent of its seed was internally produced and the amount of certified seed was even less -- 38.4 percent. Up until now, 1,955 quintals of grain have not been cleaned here. And indeed the oblast's kolkhozes and sovkhozes are the first in the oblast to commence their spring sowing. Will it happen again, as it has in previous years, that individual farms will plant grain in the soil that does not meet the requirements of the sowing standard? In order to prevent this from happening, the soviet and agricultural organs must furnish assistance to the backward kolkhozes and sovkhozes in placing all of the grain cleaning machines in operation and in removing all foreign impurities from the seed. Then the seed grain which is not acceptable from the standpoint of germinative capacity can be exchanged more rapidly for full-value seed at the procurement points.

The farmers in Talas Oblast have only a short amount of time remaining before they move out onto the fields. Meanwhile, they do not have sufficient seed for the areas to be sown. Yes and that seed which was placed in storage was not improved fully to the required conditions. More than 5,000 quintals of seed grain still require cleaning. Could it be that there is a shortage of grain cleaning machines? No, enough of them are available. The problem lies in the fact that the leaders of a number of farms in Chatkal'skiy Rayon are postponing the preparation of seed until the arrival of warm weather. Why don't the soviet and agricultural organs provide a basic evaluation of this careless approach to the preparation of seed?

A great amount of work remains to be carried out in Naryn Oblast in connection with the preparation of seed grain. Here there are 89,300 quintals of non-certified seed, including 61,500 quintals which have not passed the test for germinative capability and almost 25,000 quintals which are contaminated by smut. At the present time, special importance is being attached to organizing double-shift operation of the grain cleaning machines, so that in the near future the seed will be improved to the required purity. But many farms are not doing this. Thus the cleaning of seed is being postponed from day to day at the Kolkhoz imeni Frunze and the Cholpon Sovkhoz in Kochkorskiy Rayon and at a horse breeding plant and at the Emgekchil Kolkhoz in Tyan'-Shan'skiy Rayon. Meanwhile, time does not wait.

One cannot ignore the fact that many farms which have average and satisfactory indicators have fallen behind in their preparation of seed. In Issyk-Kul Oblast, which has produced its own good quality seed, such sovkhozes as Turgen', Dzhergalan and the state-kolkhoz association in Ak-Suyskiy Rayon have still not improved their seed to the required conditions. And the kolkhozes Druzhba and imeni Shevchenko in Dzhety-Oguzskiy Rayon only recently began cleaning their seed.

Those farms which raise their seed grain to the 1st and 2d classes of the sowing standard can expect to obtain high yields. Many grain growers are counting upon this factor. In Issyk-Kul Oblast, for example, 61.6 percent of the seed prepared is of 1st class quality. One half of the grain in Issyk-Atinskiy and

Sokulukskiy Rayons is of this same quality. With regard to Talas and Naryn Oblasts, their farms failed to lay away sufficient quantities of 1st class seed grain. Nevertheless, their augmenting of the general fund is proceeding slowly. During the second half of January, the amount of 1st class seed in the republic increased by only 6.2 percent.

This year a great amount of work must be carried out in connection with expanding the sowings of perennial grasses. The farms in Kantskiy Rayon made better preparations for increasing their grass fields than did other farms. They created the required sowing funds and improved them to high conditions. At the same time, Manasskiy, Toktogul'skiy and Kirovskiy Rayons have still not prepared even 1 quintal of certified alfalfa seed.

The timely and good preparation of seed for spring makes it possible to carry out the sowing work during the best periods and in a high quality manner and to establish a strong foundation for the harvest. Special importance is attached to overcoming the lag that has developed in the cleaning of seed and also to increasing exactingness with regard to the farm and rayon leaders. During a meeting with Moscow machine tool builders, the general secretary of the CPSU Central Committee Yu.V. Andropov emphasized the need for establishing order in all areas and applying ourselves seriously to all aspects of production discipline, including technological, supply and so forth. The results of improved discipline must be felt in all stages of our production operations.

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CSO: 1824/253

MAJOR CROP PROGRESS AND WEATHER REPORTING

STATUS REPORT ON SPRING FIELD WORK IN MOLDAVIAN SSR

Kishinev SOVETSKAYA MOLDAVIYA in Russian 12 Apr 83 p 1

/Article: "Concerning the Course of Spring Field Work"

/Text/ Having listened to information provided by the 1st deputy chairman of the Council of Ministers for the Moldavian SSR G.A. Stepanov and the leaders of ministries and departments of the republic's agroindustrial complex concerning the course of spring operations, the Central Committee of the Communist Party of Moldavia commented upon the fact that the party, soviet and economic organs carried out a definite amount of organizational and mass-political work in connection with completing this important stage in the campaign to achieve a good harvest, further intensifying the production volumes for the production of all agricultural crops and fulfilling the tasks of the third year of the 11th Five-Year Plan. With regard to the personnel, greater control and exactingness have been established and they have been given increased responsibility for preparing for the spring field operations and for ensuring that they are carried out in a timely and high quality manner. The discipline and work activity of kolkhoz members and sovkhoz workers have been strengthened. This made it possible for a majority of the farms, in an organized manner, to apply top dressings and carry out undersowings for their winter crops, to sow their early spring crops and sugar beets and seed for tobacco and vegetables in nurseries and hothouses and also to carry out work in their vineyards and orchards.

At the same time, the leaders and specialists of agricultural ministries and departments and local party, soviet and economic organs have not undertaken adequate measures for carrying out their spring sowing campaign in an organized manner or for creating in each production subunit a creative atmosphere towards the work and a high level of labor enthusiasm on the part of the agricultural workers.

On farms in Kaushanskiy, Teleneshtskiy, Kantemirskiy, Kutuzovskiy and Orgeyevskiy Rayons the levelling off of the autumn plowed land and the preparation of the soil were carried out on a very untimely basis and the sowing of the early spring crops was dragged out. The kolkhozes in Kamenskiy, Dondyushanskiy, Rybnitskiy and Rezinskiy Rayons carried out their sowing of sugar beets in an unjustifiably slow manner. The farms in Ryshkanskiy, Yedinteskiy and Glodyanskiy Rayons did not fulfill their tasks for the sowing

of peas and alfalfa and top dressings were applied to only one third of the fodder land areas in Kagul'skiy, Novoanenskiy and Ungenskiy Rayons. Very small amounts of fertilizer are being applied to the orchards and vineyards and the establishment of perennial plantings is being carried out at a very slow rate. Notwithstanding the acute deficit of moisture in the soil, irrigation in Dubossarskiy, Tarakliyskiy, and Chadyr-Lungskiy Rayons has been organized in a very unsatisfactory manner.

The staffs of ministries and departments are not analyzing thoroughly the status of affairs on their subordinate farms, they are not devoting proper attention to raising the level of agricultural production and they are not undertaking effective measures aimed at eliminating the great differences in cropping power on the farms. Just as in the past, slow work is being tolerated with regard to solving the problems which arise in the various areas and effective measures are not being employed for eliminating the shortcomings of an organizational and technological nature which appear each year.

The Central Committee of the Communist Party of Moldavia has taken into consideration the information provided by Comrade G.A. Stepanov and the leaders of ministries and departments of the agroindustrial complex regarding the course of the spring field operations.

In directing the attention of the leaders of agricultural ministries and departments to the existing shortcomings, the Central Committee of the Communist Party of Moldavia cautioned them in advance concerning their personal responsibility for the sowing and organized tending of the crops and for fulfilling the plans for producing and selling farm products to the state.

The recommendation was made to have the Kolkhoz Council of the Moldavian SSR (Comrade Ryabich), the Ministry of Agriculture for the Moldavian SSR (Comrade Lupashko), the Ministry of Viniculture and Wine-Making for the Moldavian SSR (Comrade Luk'yanov), the Ministry of the Food Industry for the Moldavian SSR (Comrade Chekoy), the Ministry of the Fruit and Vegetable Industry for the Moldavian SSR (Comrade Bardash), the agroindustrial associations Moldtabakprom (Comrade Vergitskiy) and Moldefirmasloprom (Comrade Khynko), Goskomsel'khoztekhnika for the Moldavian SSR (Comrade Bondarenko), the Moldsel'khozhimiya Association (Comrade Atanovskiy), rayon party committees and rayon executive committees undertake additional measures aimed at improving the organization for carrying out the spring work, taking advantage of the achievements of science and leading experience and establishing a strong foundation for obtaining high yields. The following measures should be carried out for this purpose:

...taking into account the existing conditions, all equipment, fertilizers and herbicides should be utilized in a highly productive and efficient manner, the sowing of sunflowers should be carried out during the best periods, in a high quality manner and in just 4-5 days and corn for grain and silage -- in just 8-9 days and the fulfillment of all sowing tasks should be ensured;

...reliable measures for the cultivation of healthy and high quality vegetable and tobacco seedlings, the soil must be prepared in a timely manner, the logistical and labor resources for planting the seedlings in the ground

must be in a good state of readiness and the areas planned for tobacco and all types of vegetables must be properly maintained. Through the extensive use of seedling planting machines, the planting of tobacco outdoors should be completed by 1 May and that for the vegetable seedlings -- no later than 15 May;

...improvements should be realized in the agricultural practices employed for cultivating dorage crops, especially alfalfa and waterings and top dressing applications should be organized for these crops so as to ensure maximum yields from the first cutting. Timely preparations must be made for harvesting the grasses, the proportion of hay in the structure of the coarse feeds must be increased, extensive use must be made of progressive feed procurement technologies and all technical resources available for this purpose must be used in a highly productive manner;

...the tending of the winter and spring crops must be organized in a thorough manner and measures aimed at combating pests, diseases and weeds must be carried out in a timely and high quality manner.

The required number of plants per hectare must be ensured in all areas and by 1 May 1983 work must be completed in connection with forming the density of the plants on the sugar beet plantations;

...the level for the agricultural practices employed on the orchards and vineyards must be raised, the equipment and chemical means for combating pests and diseases must be prepared, waterings involving applications of complete dosages of mineral fertilizers to the fruit-bearing areas must be organized, the planting of new orchards and vineyards must be completed and the production of vineyard graftings and the planting of them in the soil must be completed within the planned periods.

The Ministry of Land Reclamation and Water Resources for the Moldavian SSR, other ministries and departments of the republic's agroindustrial complex, the rayon party committees and rayon executive committees and the primary party organizations must exercise special control over watering of the agricultural crops, organize around-the-clock operation of the sprinkling equipment, raise the effectiveness of the irrigated lands and persistently achieve increases in the yields of products from each hectare of land.

The recommendation has been made to have Goskomsel'khoztekhnika for the Moldavian SSR, the Ministry of Procurements for the Moldavian SSR, the Moldsel'khozhimiya Association and the State Committee for Petroleum Products of the Moldavian SSR ensure that the farms are provided with a continuous supply of spare parts, high quality seed, fertilizers and plant protective agents and fuel and lubrication materials, in the required amounts and assortment and in keeping with the required schedules. To organize the timely repairing and technical servicing of tractors and other items of agricultural equipment being employed out on the fields and to implement measures for improving considerably the operation of the machine-tractor pool.

The ministries and departments of the republic's agroindustrial complex, the rayon party committees and the rayon executive committees must devote more

attention into introducing the group contract and cost accounting into use in the brigades and teams, raise the exactingness of the leaders of kolkhozes, sovkhozes, sovkhoz-plants and interfarm associations for the carrying out of this work and launch a socialist competition in all areas among the labor collectives for achieving high final results.

The rayon party committees, rayon executive committees, primary party organizations and professional trade union and komsomol organs must develop in each labor collective an atmosphere of creative search, industry and responsibility on the part of the personnel for the fulfillment of the plans and socialist obligations and they must support in every possible way the movement to achieve high cropping powers for the grain and vegetable crops, fruit, grapes and technical and forage crops and they must disseminate the experience of leading workers. The results of the course of the field operations must be summarized regularly and publicized on an extensive scale.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

MEASURES FOR COUNTERING DRY CONDITIONS IN NURSERIES, VINEYARDS

Kishinev SOVETSKAYA MOLDAVIYA in Russian 5 Apr 83 p 3

/Article from Ministry of Agriculture for the Moldavian SSR: "When There Is Little Moisture in the Soil"/

/Text/ Owing to weak supplies of moisture in the soil, the nuresery and vineyard workers were confronted by many complicated problems. How can these problems be solved?

It is important to bear in mind that a graft is obtained for the most part from fruit-producing vineyards and thus fewer carbohydrates are contained in it than is normally the case. This is manifested in a delay in the opening up of the buds during the stratification period. Thus these graftings must necessarily be aimed at secondary growth such that the buds on the graft will grow.

The light hardening of graftings must be carried out in a hydroponic layer. In this manner they can be fed up until the time they are planted in a nursery. Pre-planting watering is best carried out by means of ridged slits in the hillocks. If no such possibility exists, then no less than 20 liters of water is furnished per linear meter.

After the graftings have been transplanted in a nursery, abundant sprinkling irrigation is carried out with subsequent turning over of the moisture by tilling and loosening of the hillocks. Special attention must be given to packing the soil at the base of the graftings. For the purpose of improving their nourishment, the planting is carried out with a simultaneous application of mineral fertilizers.

At stock nurseries, the first removal from a grafting or seedling stock should be carried out when the shoots reach 20-25 centimeters and the second -- 50 centimeters. In the process, at stock nurseries for intensive type graftings the graftings should be left with 18-22 shoots for weak-growth varieties, 28-30 for medium-growth and 40-45 for strong-growth varieties.

Under complicated conditions, all of the agricultural practices should be directed towards ensuring maximum moisture retention in the soil. In particular, deep tilling of the soil is not recommended.

In establishing new vineyards, the conditions required for complete rooting and good seedling growth must be created. Towards this end and assuming that hydroborers are employed during planting, the process is slowed down in order to make the well-holes deeper and more spacious and also to increase the delivery of water by a factor of 2-3.

A top dressing of fertilizer is carried out simultaneously with the planting work. Towards this end, 80 grams of active agent for each element are added to a tank per 100 liters of water.

Under drought conditions and 4-6 days following the planting, the first watering is carried out using hydroborers or another means. When the watering is carried using a hydroborer, two holes are made around each bush in a manner such that a damp area not less than 0.5 meters in diameter and depth is formed.

Subsequent waterings are carried out as necessary depending upon the weather conditions. On each occasion complete mineral fertilization is added to the water at the rate of 120 grams of active substance per 100 liters of water.

In the case of waterings carried out using conventional means (hose from a tank), a water hole is made around each bush and later this hole is filled in.

Once the planting and watering work have been completed, it is recommended that cultivation and harrowing be carried out to a shallow depth.

Subsequently the tending of the young plantings is carried out in keeping with the agricultural instructions.

During the early spring period at existing vineyards, only harrowing (with no cultivation) should be carried out rapidly for the purpose of retaining the moisture in the soil.

On fruit-bearing tracts where a reserve of buds remained following the winter pruning process, the workload should be corrected to the maximum possible degree.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### KHARKOV OBLAST SPRING FIELD OPERATIONS REVIEWED

Moscow PRAVDA in Russian 1 Apr 83 p 1

/Article by I. Lakhno, Kharkov Oblast/

/Excerpts/ For the fields in Kharkov Oblast, spring usually arrives from the south. This year however the machine operators on all of the farms commenced their operations practically simultaneously. The first important work cycle -- that of applying a top dressing to the winter crops -- is behind us. While conditions were still damp, the aviators furnished assistance to the farmers by applying mineral fertilizer to their crops on 200,000 hectares. Later, units were moved out onto the fields to apply a root top dressing to the plants.

"Spring came so suddenly that we barely had time to turn around" stated the deputy chief of the agroindustrial association in Lozovskiy Rayon A. Semekha, "and the volume of field work to be carried out is actually twice as great as usual. For the early grain crops alone, 23,000 hectares have been set aside."

Just as soon as the soil dried out, the machine operators in Lozovskiy Rayon moved 300 units with harrow couplings out onto the fields. Over a period of 2 days, the moisture was turned under on all 74,000 hectares. Immediately thereafter, tractors pulling sowing machines commenced their operations. The rayon's agricultural service set aside 60 hours for the sowing of early grain crops and the "repair" of winter crops.

Each morning the oblast agricultural service makes a quick analysis of the work performed by the machine operators the previous day. This makes it possible to immediately record any reductions in work which may have taken place. For example, on the very first day the farmers in Pervomayskiy Rayon applied a top dressing to 10,000 hectares of winter crop sowings, whereas on farms in Izyumskiy and Shevchenkovskiy Rayons, where the same potential was available, four times less work was carried out. It does not take very long to isolate the reason for this: lack of coordination between the farms and the rayon agrochemical complexes. At some kolkhozes, time is wasted as they wait for ideal conditions. Yesterday it seemed rather early to the agronomists to commence the work and before long they will come to understand that it was late.

The oblast's spring crop fields are quite extensive this year. Early grain crops alone must be sown on 400,000 hectares. The grain corn areas are being increased by almost twofold. In order to carry out these tasks during the best periods, one thousand more sowing machines than last year have been restored and moved out onto the fields. More than 2,000 machine operators trained at enterprises in Kharkov and other cities will furnish assistance to the rural workers in organizing double-shift operations. A socialist competition is being organized in the detachments and brigades; it is under the direction of temporary party groups. The farmers are well aware that the better they sow the better will be the return for their labor.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### FIELD WORK PROGRESS, WEATHER CONDITIONS IN GEORGIA

Tbilisi ZARYA VOSTOKA : in Russian 4 Jan 83 p 2

[Article by Zurab Tskitishvili, chief of Grain and Industrial Crops Administration of Georgian SSR Ministry of Agriculture: "Grain: Get the Maximum"]

[Text] The address of General Secretary of the CPSU Central Committee Comrade Yuriy Vladimirovich Andropov at the triumphal meeting in Moscow dedicated to the 60th anniversary of the formation of the USSR especially emphasizes that each union republic must in the immediate future make a real contribution to the realization of the food program.

According to the all-union division of labor, Georgian SSR has been assigned the leading place for growing of tea, subtropical fruits and viticulture. But this circumstance does not reduce the importance of grain growing. Quite the contrary, grain growing continues to occupy a key place in all of agricultural production, and the development of another important sector--animal husbandry--depends on its condition. This is why the 10th plenum of the Central Committee of the Communist Party advanced the task of increasing production of grain and fodder in the republic. An aim was set of sharply increasing the yield of grain fields and of producing for the republic as a whole by the end of the present five-year plan no less than 800,000-900,000 tons of grain annually. In order to attain this, it is necessary to boost average grain yield to 30 quintals per hectare.

This task is not easy, but fully realizable. An example of this is the experience of the republic's leading rayons, first of all Abashkiy Rayon, where for the entire 10th Five-Year Plan, average yield per hectare reached 43 quintals of grain. High indicators for grain production were also obtained by the farmers of Tsiteltskroyskiy, Khobskiy and a number of other rayons.

And for the republic as a whole, despite the fact that as a result of expansion of plantings of perennial crops, grain-crop areas have been getting smaller from year to year, the yield of grain fields continues to grow.

Nonetheless we can say bluntly--in the second year of the 11th Five-Year Plan, the yield of grain fields could be bigger. And if this has not occurred, it is solely due to the fact that a portion of the rayons and farms of the

republic has not displayed the necessary determination in solving the grain problem. Unfortunately, gross violations have been allowed to occur of optimum sowing periods, preparation of seeds and soil, cultivation of sowings and of the manner of applying fertilizers and water to the fields....

And the basic reason for the fact that many rayons have not finished tallying a significant portion of the crop is not bad weather but a low agrotechnical discipline. Thus the farmers of Dmanisskiy, Tsalskiy, Bogdanovskiy and Akhalkalakskiy Rayons operated under the same weather conditions, but the yields they attained were quite different. Whereas the people of Bogdanovskiy and Akhalkalakskiy Rayon had an average per-hectare yield of respectively 18.5 and 21.9 quintals, those of Dmanskiy and Tsalskiy Rayon had an indicator of only 10.2 and 10.5 quintals per hectare. A similar picture is to be seen in a comparison of the results of Onskiy and Ambrolaurkiy Rayons (an average yield of 10 quintals per hectare) with Tsagerskiy and Lentekhskiy Rayons (17-18 quintals) and of the area of the city of Tshaltubo and Sachkherkiy Rayon (12-13 quintals) with the area of the city of Tkibuli (21 quintals).

And here are some disquieting results--in Tsalskiy Rayon, the grain-production target was fulfilled only 30 percent and Dmanisskiy Rayon--43 percent. Aspindzskiy, Sagaradzhoyskiy, Dushetskiy, Onskiy and Ambrolaurkiy Rayons produced less than half of the planned yield of grain.

The reasons for such failures, I repeat, lie primarily in gross violations of agrotechnical discipline in cultivation of grain crops. For example, in a whole series of the republic's rayons, a paradoxical situation has come to exist where despite constantly growing technical equipment of farms and despite reduced grain-production plans, time periods of winter sowing are constantly not being kept. Thus, whereas in 1976 about 172,600 hectares had been sown by 1 November, in 1982, a great deal less was sown by this date. And no particular justifications exist for the heads of the agroindustrial associations of Tsalkskiy Rayon where the winter sowing plan failed to be fulfilled by 22 percent, Aspindzskiy and Gardabanskiy Rayons (17 percent), Telavskiy Rayon (14 percent), South Osetian Oblast (11 percent). The managements of agroindustrial associations and farms in Samtredkiy, Sestafonskiy and Ambrolaurkiy Rayons and the region of the city of Chiatura have shown complete irresponsibility in organization of winter sowing.

In the complex of measures providing for the stable production of high grain yields, proper organization of seed growing very nearly plays a critical role. What is even more disturbing is the fact that on most of the republic's farms plans for the creation of own seeds are not being fulfilled from year to year. Moreover, there is to be observed an acute loss of traditions of carrying on seed work even in the leading grain producing rayons.

In 1977, on the farms of Tsiteltskaroyskiy Rayon, 94 percent of the total quantity of seeds were first class. In 1982, this indicator had dropped to 82 percent, in 1981--to 52 percent and in 1982--to 48 percent. A similar situation is to be found on the farms of Telavskiy and Tianetskiy Rayons and South Osetian Autonomous Oblast. We have already included Tsalskiy Rayon among those rayons that had not fulfilled the grain-production plan in 1982. Thus for the sowing of winter crops for the 1983 harvest, only 3.3 percent

of the allocated seeds were first class. In this way, the management of the rayon agroindustrial association doomed itself to another failure.

Work with spring-crop seeds has been no better. As of 1 December 1982, the farms of Marneul'skiy and Bolinisskiy Rayons did not have a single quintal of certified grain and legume crops (not counting corn). Only a minimum of certified seeds was to be had on the farms of Akhmet'skiy Sagaredzhoyskiy, Tianetskiy and Dushetskiy Rayons and South Osetian Autonomous Oblast. Not wanting to trouble themselves with work relating to the preparation of first-class seeds, here everybody hopes to obtain them by way of a loan or purchase from state stocks. Need it be said how unsound and wrong such ideas are. One of the reasons for this in our view is that if managers of farms had been made strictly accountable for the failure of targets relating to preparation of seed stocks, earlier, there would be no need for the exercise of such a function now.

It is only the absence of strict demand in the case of people directly responsible for the state of grain growing on farms, and only this, that can explain the fact that the plan for fall plowing in Tetritskaroyskiy Rayon by the beginning of December had been fulfilled only 8 percent. This work failed to be done in optimum times in Kapskiy, Karel'skiy, Goriyskiy and a number of other rayons.

All this says that it is necessary to resort to the most urgent and effective measures aimed at all-out strengthening of agrotechnical discipline on farms. The fact is the most significant reserves for increasing grain production in the republic are to be found in a general rise of farming standards.

And although we are now speaking to the effect that the leading grain-producing regions of the republic should activate a search for ways of maximal utilization of the potential possibilities of the most effective grades and hybrids of grains and advanced technology of their cultivation, with respect to such rayons as Tsaliskiy, Aspindzskiy, Dmanisskiy, Tianetskiy, Sachkher'skiy, Ambrolaur'skiy and others reference is made to the introduction of elementary order in grain farming.

First of all, it is necessary to begin with seed growing. We advance the question of restoration of seed-growing brigades and sectors on farms and the creation of the highest possible agrostocks.

There should also be developed locally concrete measures for a planned transition to a more efficient structure of the grain fields themselves by using more effectively the potential possibilities of corn for this.

It is important to achieve improvement in the technology of cultivating grain crops on the basis of a proper combination of new progressive industrial methods with traditional ones. And for this there should be provided all the necessary material-technical resources during the winter season.

In East Georgia, a ponderable factor for raising the yield of grain fields should be soil-protective agrotechnology; hence the need for the fastest possible introduction of it into practice. Farms that would avail themselves of this technology should obtain the necessary recommendations from the

Sartichal'skiy Support Station of the republic's Tavtavi Scientific-Production Association.

Farmers should give the closest of attention to winter sowings. There should be activated namely now the struggle against pests and diseases, while services for protection of plants should work with more effectiveness; this also holds true for the work of forecast and warning centers.

It is also necessary to concern oneself with providing high-level agrotechnical stocks for spring crops. First of all, rayons in which fall plowing has been protracted should in every way possible accelerate this work and also adopt measures for the application of required dosages of mineral fertilizers to the soil.

In launching the struggle for the 1983 crop, it is necessary to remember that lost time cannot be retrieved. Guided by the decisions of the November (1982) Plenum of the CPSU Central Committee and the 11th plenum of the Central Committee of the Communist Party of Georgia, the republic's farmers must achieve already in this year a significant rise in the yield of grain fields and thus make a ponderable contribution to the realization of the food program.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### EFFECT OF WEATHER, PRECIPITATION ON GEORGIAN CROP YIELDS

Tbilisi ZARYA VOSTOKA in Russian 5 Mar 83 p 1

[Article by Eka Akhalkatski: "Snow and the Crop"]

[Text] Winter has come to an end . . . and snow has been falling. This is the surprise spring brought to the farmers of the republic.

ZARYA VOSTOKA correspondent, Eka Akhalkatsi asked the deputy chief of the division for short-range weather predictions of the republic administration for hydrometeorology and environmental observation, Nadezhda Chekal', to answer the question of what kind of weather is expected in March.

"February was not generous with precipitation. In the rayons of Eastern Georgia there was considerably less of it than the norm, which is true, of the entire territory of the republic. Snow covered the ground only in certain high mountain regions.

"And then on the night of 3 March in Kakheti a snowfall began which has now spread throughout all of Eastern Georgia. It should be noted that the farmers of this region have long been waiting for precipitation. The snow will increase the flow of water into the water reservoirs, which will make it possible to augment the supplies of water for irrigation.

"In the next few days snow is expected throughout the territory of the republic. There will be rain only in individual regions of Western Georgia.

"According to long-range predictions of the Tbilisi weather bureau, the average monthly temperature in March over the majority of the territory of the republic is expected to be somewhat less than normal. On certain days of the first half of the month there will be lower temperatures in the lowland regions of Western Georgia: it will drop to from -2 to +3 degrees. This same phenomenon is expected in the zone of the Kartalinskaya Plain. Here it will drop to 4-5 degrees below zero. In the mountain regions of the republic the temperature at night will drop to -5-10 degrees and in the high mountain regions--to 13-18 degrees below zero."

How will the weather conditions affect the productivity of agricultural crops?

Zurab Tskitishvili, chief of the administration of grain and industrial crops of the Georgian SSR Ministry of Agriculture:

The caprices of the weather in February caused a great deal of damage to the areas planted in winter crops. Because of the stormy winds it will be necessary to replant and underplant about 40,000 hectares. The farms intended to do this work in March, but the snowfalls have forced them to revise their decision. For this reason the planting of sunflowers and sugar beets is being delayed. But there are also significant advantages. The fact is that the soil will receive the necessary quantity of moisture and problems of irrigation will be of no consequence. But it will be necessary to conduct the top dressing of the soil with nitrogen fertilizers in shorter periods of time."

Givi Emukhvari, deputy chief of the administration for tea and subtropical crops of the Georgian SSR Ministry of Agriculture:

"Snow is nothing terrible for tea plantations. And it does not bother citrus trees either. The only thing that the agricultural workers must do is promptly shake the snow off from the trees. But there is also the probability that there will be frosts. The farmers are also prepared for this turn of events.

"The citrus farmers have the necessary quantity of smudge pots. The situation is the same for the tea growers: they are fully ready to bring the sets of equipment for agrotechnical work should it be necessary."

Dzhumber Shubitidze, head agronomist of the administration of vegetable growing of the Georgian SSR Ministry of the Fruit and Vegetable Industry:

"The snow cover has no effect on the development of vegetable crops. But this has caused the planting of early potatoes to be delayed, which the farmers had already started in Bolnisskiy and Marneul'skiy rayons. Now, in order to plant at the optimal agricultural time periods, they will have to revise the schedule in order to accelerate planting work."

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CSO: 1824/266

## MAJOR CROP PROGRESS AND WEATHER REPORTING

### IMPORTANCE OF LAND, SEED PREPARATION FOR SOWING STRESSED

Ashkhabad TURKMENSKAYA ISKRA in Russian 19 Jan 83 p 2

Article by A. Bigel'din, chief of the Cotton Production Administration of the Ministry of Agriculture for the Turkmen SSR: "A Strong Foundation for the 1983 Harvest"/

Text An analysis of the work carried out by a majority of the kolkhozes and sovkhozes in 1982 uncovered the principal reasons for the low return from a hectare of cotton. The chief one -- untimely and low quality carrying out of a complex of autumn and winter operations.

Unfortunately, the sad lessons of last year were not taken into account. On a majority of the farms the rates for preparing the land for the 1983 sowing campaign were extremely low, with oversimplifications of the accepted technology being tolerated.

One mandatory agricultural measure to be carried out during the winter period is that of current levelling of the land. This work must be carried out prior to the principal plowing work. Moreover, it must be carried out under the direction of the irrigation specialists, all of whom are quite familiar with the relief of the tracts of land assigned to their care. In the process, adjustments should be made to the irrigation network, the edges of the checkplots should be cleared of all weeds and, when possible, the checkplots should be formed in the shape of a rectangle.

A shortage of earth-moving equipment precludes the possibility of carrying out current levelling work on the entire area to be sown. Thus it becomes necessary, taking into account the available equipment, to plan this work for several years at each farm. It should first of all be carried out on highly fertile lands which are well supplied with irrigation water.

Weeds are the scourge of cotton fields. All methods for combating them are good. But the principal measure for destroying the roots of weeds is that of removing them from the fields during the winter. The specialists are quite familiar with how this is to be done. Nevertheless, it is only on individual farms that root removal work is being carried out.

Very little use is being made of herbicides for combating weeds. According to data available on 10 January, chemicals were applied to only 37,500 hectares at kolkhozes and sovkhozes throughout the republic and in Tashauz Oblast they have still not even commenced this work.

It is known that the basis for obtaining high yields is the highly efficient use of mineral and organic fertilizers. According to scientific data and the experience of leading farms, the greatest return from phosphorus fertilizer is realized when it is applied during the main plowing operation. But the farms are still not being supplied with the optimum norms for such fertilizer. In this regard, the kolkhoz and sovkhoz agronomists must decide which fields must be supplied with this fertilizer during plowing or in the form of a top dressing. A preference must be shown for non-saline fields which are well drained and have a good supply of irrigation water. The norms must be established on the basis of cartograms.

For the republic as a whole, mineral fertilizer top dressings were applied to 74,000 hectares -- less than 20 percent of the cotton fields.

There is no need for mentioning the importance of humus in the soil. Rotted farmyard manure represents a good source for augmenting the humus supplies. The best results are achieved when it is applied at a rate of no less than 30-40 tons per hectare. It is understandable that it is not always possible to apply such dosages to the entire sowing area. Thus at each farm the agronomists must compose a plan for farmyard manure turnover.

However, the facts indicate that this work is being carried out in an unsatisfactory manner on many farms. For the republic as a whole, the task of procuring farmyard manure has been fulfilled by just slightly more than one third and in Leninskiy Rayon -- by 12 percent, Marynskiy Rayon -- by 19, Kalininskiy and Kunya-Urgenchskiy Rayons -- by 30 and in Khodzhambasskiy Rayon -- by 40 percent.

Healthy seedlings and the growth and development of agricultural crops are greatly dependent upon leaching and moisture-accumulation waterings.

The specialists are quite familiar with the irrigation norms and watering equipment. But it is not out of place to mention that leaching waterings are effective only on well levelled off checkplots and in the presence of intra-checkplot and temporary sprinklers.

The waterings must be carried out around-the-clock. Their quality is entirely dependent upon the expertise of the irrigation specialist. Thus conditions must be created on each farm for fruitful work by all those engaged in carrying out this important work. The number of leachings is dependent upon the salt content and the mechanical structure of the soil. If the plans call for water to be issued two or three times, in no case should the surface of the soil be allowed to dry out between waterings.

At the present time, the leaching of saline lands should be accelerated. The ground water level is low and the irrigation water is not being limited. This is a factor of considerable importance. According to a long-term forecast, low water conditions are expected in 1983. The possibility is not excluded that in the near future water will be limited and this will complicate the leaching of the lands.

Strangely enough, favorable opportunities are being overlooked on a majority of the republic's rayons. The leaching of the saline lands is proceeding slowly.

In addition to thorough preparation of the soil for sowing, special importance is being attached to procuring high quality seed. This work is being carried out by the cotton ginning plants. A majority of the branch's enterprises is striving to ensure that the cotton growers are provided with high quality seed. At a majority, but not at all of the plants. The situation is especially poor at the Murgab and Bayram-Ali Plants, which have produced 3,000 tons of sub-standard seed. Large quantities of sub-standard seed are also being produced by the Tashauz and Kerki Plants.

The Preparation of the land and seed for sowing includes many types of work, all of which are of equal importance and should never substitute for one another. Priority importance is attached to the work schedules and quality.

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CSO: 1824/330

## MAJOR CROP PROGRESS AND WEATHER REPORTING

### COTTON SOWING WORK COMPLETED IN ASHKHABAD OBLAST

Ashkhabad TRUKMENSKAYA ISKRA in Russian 16 Apr 83 p 1

/Article by M. Aleksandrova: "Sowing Completed"/

/Text/ The farmers in Ashkhabad Oblast were the first in the republic to complete their cotton sowing plan. Fine preparation of the land and large-group utilization of the equipment promoted the rapid carrying out of the spring field work. Mechanized complexes were in operation at all of the kolkhozes and sovkhozes.

Denuded seed was planted on 31,800 hectares. This will make it possible to reduce the expenditures of manual labor and time in the thinning out of the plantings. Extensive use was made of cotton sowings carried out on intact irrigation furrows. Over a period of several years, this method has produced positive results at the Leninizm Yely Sovkhoz in Gyaurskiy Rayon. The seedlings appear more rapidly on ridges and they develop in a better manner. An economy in resources is achieved by reducing the number of operations. This year the cotton was sown in this manner at the kolkhozes Leningrad and Leninizm in Serakhskiy Rayon and on other farms in Bakhardenskiy and Kaakhkinskiy Rayons.

The healthy seedlings which appeared on tracts which were sown early testify to the quality of the seed used. The farmers plan to commence their inter-row tilling work during the next few days. At the present time, the cultivators are being prepared in all areas.

This year's sowing campaign is the first one for those brigades and teams which converted over to using the group contract. Such subunits are in operation at the Leninizm Yely Sovkhoz in Gyaurskiy Rayon, at the kolkhozes imeni Sverdlov and Ashkhabad in Serakhskiy Rayon and on some farms in Kaakhkinskiy and Bakhardenskiy Rayons. These brigades and teams concluded contracts with the kolkhoz administrations and sovkhоз boards of directors, they are working on the basis of technological charts and they are making every effort to obtain high and early yields with minimal expenditures of labor and resources.

This year the chemical method for combating weeds was employed much more extensively during the sowing campaign than has been the case in past years.

Herbicides were applied simultaneously with placing the seed in the soil. In the interest of reducing manual labor during the carrying out of weed control and thinning out work, a number of farms in Kirovskiy, Tedzhenskiy and Serakhskiy Rayons plan to carry out the mechanized thinning out of the plantings.

The oblast's cotton growers, by completing their busy period of spring work during the best periods, created favorable prerequisites for obtaining a high and early harvest.

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## MAJOR CROP PROGRESS AND WEATHER REPORTING

### BRIEFS

NEW COTTON VARIETY--Chardzhou, 23 Feb--For five years now, scientists at the oblast's experimental agricultural station have been studying the potential for cultivating fine-fibred cotton under the conditions found in the region of the central flow of the Amu-Darya River. The following varieties were tested: 9647-I, ASh-25 and 9732-I. Especially fine results were obtained from the fine-fibred ASh-25 cotton variety. Last year it furnished an average of 37.2 quintals of raw cotton per hectare, with the brigade headed by A. Charyyevaya obtaining 40.3 quintals. This variety is suitable for machine harvesting, its bolls do not fall off at a temperature of 45° or more of heat and it is less demanding with regard to moisture than the medium-fibre 133 cotton variety cultivated here. Each hectare of fine-fibre cotton produced a profit of 3,818 rubles -- greater by almost threefold than that obtained from medium fibre cotton. /by Yu. Kandaurov/ /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 24 Feb 83 p 2/ 7026

COTTON SOWING COMMENCES--The cotton growers of Turkmenistan have commenced their mass sowing of cotton. This principal agricultural crop must be sown on an area in excess of 500,000 hectares. /Text/ /Moscow EKONOMICHESKAYA GAZETA in Russian No 14, Apr 83 p 3/ 7026

TURKMEN COTTON PLAN--Turkmen SSR--The mass sowing of cotton has commenced in the Turkmen SSR. This year the republic's farmers have vowed to sell 1.23 million tons of raw cotton to the state, consisting mainly of the more valuable fine-fibre varieties. /by Kh. Bayramkuliyev, brigade leader of a cotton growing brigade at the Leninizm Yely Sovkhoz/ /Excerpt/ /Moscow TRUD in Russian 14 Apr 83 p 1/ 7026

LOW COMBINE OUTPUT--Turkmen SSR--The green hills of the desert are covered by a lilac-colored flower and red poppies. Spring has come into its own and sowing operations are in full swing out on the fields. On more than one occasion, on the eve of the busy period of work, the farm agronomists were observed searching for fields suitable for machine harvesting. They select those which are available instead of creating them. The expenditures of manual labor for the cultivation of cotton in the republic are excessive. And use of the harvesting equipment is especially unproductive. Here are the results for last year. The average seasonal output for a combine was only 61 tons. The harvesting work was dragged out and the losses in raw cotton precluded the possibility of achieving the goal called for in the plan. The

lessons of last year call for greater concern to be displayed for preparing the fields for machine cultivation of the plantings and for the same degree of importance to be attached to the harvest work as to carrying out the sowing work during the best periods and in a high quality manner. The cotton growers of Turkmenistan are in pursuit of a high goal: to supply the homeland with 1.23 million tons of raw cotton, including 294,500 tons of fine-fibre varieties. /by V. Gavrichkin/ /Excerpts/ /Moscow TRUD in Russian 14 Apr 83 p 1/ 7026

**FIELD WORK PROGRESS**--The weather is becoming more spring-like every day. Weather conditions in the south of the republic allowed workers to begin field work. According to data from the UkSSR Ministry of Agriculture, early grain crops are already being sown by workers in Crimean, Nikolaev, Kherson, Odessa, Zaporozhye, and Transcarpathian Oblasts. In the Ivano-Frankovsk and Rovno areas moisture retention measures are being implemented and winter crops are being top dressed. The field work front widens daily. Fulfilling the decisions of the May and November (1982) CC CPSU Plenums, RAPO councils are directing all the efforts of their subdivisions towards highly productive technology use, and application of leading work methods in servicing detachment machines and equipment.

[Text] [Kiev SIL'S'KI VISTI in Ukrainian 19 Mar 83 p 1] 9443

**EARLY SPRING CROPS**--The republic's field work front is expanding. Early spring crops are being sown on most farms. Farmers in Odessa, Nikolaev and Ternopol Oblasts are working at a rapid pace. Wide-sweep units in small detachments are used successfully there. Efficient technical servicing has also been provided. Simultaneously with sowing early grain and sugar beet crops the republic's farmers are continuing to top dress winter crop areas. This work is well organized in Transcarpathian, Crimean, Chernovtsi, Kirovograd and Kherson Oblasts. Full value mineral fertilizer is applied here with seed drills. When areas are too wet and equipment cannot be used, farmers are aided by agricultural aircraft. Especially successful at present are pilots of the Kharkov aviation enterprise. According to our correspondent they have already applied mineral fertilizer to 100,000 hectares. [Text] [Kiev SIL'S'KI VISTI in Ukrainian 23 Mar 83 p 1] 9443

**WINTER CROP CARE**--The field work pace is picking up continuously. Following the southern farms of the republic, machine operators in the remaining oblasts are putting equipment into full gear. "It is very important today to conduct all work in a single complex," states L.L. Zinevych, chairman, Main Administration for Grain Production, UkSSR Ministry of Agriculture, commenting on the course of the harvest struggle. Limited soil moisture supplies require that sowing dates be condensed, avoiding a break between cultivation and seed covering. At the same time all available means for winter crop top dressing should be put to work. This agricultural measure is being successfully implemented by farmers in Crimean, Chernovtsi, Rovno and Kiev Oblasts. But in Dnepropetrovsk and Kharkov Oblasts the most favorable periods are being wasted. Early spring vegetation renewal can lead to excessive plant growth and crop

lodging so that even now preparations should be made for winter crop working with preparation TUR. Work is also beginning in the irrigated lands of the south. Farms in the Odessa area are beginning to water winter crops and perennial grasses. Moisture charging work is also being done. Irrigation systems in Zaporozhye are being filled with nourishing moisture. Water has reached farms in Pervomayskiy, Krasnogvardeyskiy and Dzhankoyskiy Rayons through the northern Crimean canal. Farmers are beginning to use it productively.

[Text] [Kiev SIL'S'KI VISTI in Ukrainian 25 Mar 83 p 1] 9443

EARLY GRAIN CROPS--Lvov Oblast--Early grain crops were sown quickly and well by farmers in Buskiy Rayon utilizing wide-sweep units. Machine operators on farms in Buskiy Rayon were the first in the oblast to finish sowing early grain crops. Oats, vetch mixes, lupine, annual grass, barley and wheat seed were sown over 4.5 thousand hectares. [By V. Karpiy, correspondent SIL'S'KI VISTI] [Excerpts] [Kiev SIL'S'KI VISTI in Ukrainian 24 Mar 83 p 1] 9443

SPRING SOWING PLANS--Vinnitsa Oblast--Because of last winter's unstable weather conditions winter crops in some oblast areas are in an unsatisfactory state. They will have to be overseeded and reseeded. Also, spring grain crop areas have been expanded. Oblast farms these days are finalizing work plans, considering field registration data, and are analyzing the possibilities for a further increase in use of the machine-tractor pool. Farm machine operators and rayon agricultural technology workers prepared couplings which will enable tractors T-74 to work with three seed drills during spring sowing, and T-70S to sow sugar beets with two seed drill units. This will help oblast farm workers to perform more spring field work with fewer losses and within optimal dates. Oblast agricultural technology subdivision workers, farmer partners and helpers in the agroindustrial association, are doing everything in their power to provide uninterrupted machine work in the fields so that kolkhoz and sovkhoz machine operators can utilize it with maximal returns. The size of the field harvest is dependent on promising machine, soilworking and sowing equipment work. These, then, are the concerns of workers in all of our production subdivisions about the future harvest, about an important contribution of Vinnitsa area farmers to the realization of the country's Food Program. [By D. Zahorodnyuk, B. Kolov] [Excerpts] [Kiev SIL'S'KI VISTI in Ukrainian 10 Mar 83 p 1] 9443

PILOTS DISTINGUISH THEMSELVES--Kiev, March 23--The two millionth hectare of agricultural lands since the beginning of the year was worked today from the air by aircraft of the Ukrainian Civil Aviation Administration. This is more than the goal set for the given period. The highest indices were achieved by collectives from Vinnitsa, Kirovograd, Voroshilovgrad, Poltava and Sumy aviation enterprises. According to information given to the RATAU correspondent by administration chairman, honored USSR pilot O.M. Horyashko, branch workers are making a worthy contribution to the realization of the Food Program. The total extent of aircraft-chemical work in Ukraine will amount to more than 15 million hectares. In answer to the May and November (1982) CC CPSU Plenum decisions aircraft enterprise collectives in the Ukraine took upon themselves increased socialist obligations. It was decided, in particular, to raise the yearly plan working 200 thousand hectares from the air. [RATAU] [Text] [Kiev SIL'S'KI VISTI in Ukrainian 24 Mar 83 p 1] 9443

EARLY GRAIN CROPS--Crimean Oblast--Machine operators in Crimean Oblast are sowing the last hectares; farmers in Sakskiy and Chornomorskiy Rayons completed this work in two days. Springtime in the Crimea arrived with dry winds which dry out soil moisture quickly. Although there are not too many areas assigned to early spring crops, mainly forage, barley, oats, peas and mixed feed, the task was important: seed should be sown as quickly as possible into moist soil. Kolkhozes imeni Kirov, imeni Gorkyy, "Peremoga" and "Ozernyy" sovkhoz also finished sowing in one day. The next day early spring crops were sown on all 8,000 hectares in Sakskiy Rayon. In Chornomorskiy Rayon there were 6,000 hectares which had to be sown with early spring crops along with mixed feed crops and perennial grasses. At "Kirovskiy" sovkhoz during the so-called "February windows" they were able to sow barley and oats over 400 hectares. But there was a snowfall unexpectedly and the work stopped. However, when the optimal days for sowing arrived, the Kirov area people again went out into the fields and finished sowing in a day and a half. "It is encouraging," stressed RAPO council chairman V.P. Mitin, "that one of the first to finish sowing was 'Mayak' kolkhoz where weather conditions are more complex today than in other farms. In addition, the farm's mechanized team consisting of tractor operator Andriy Chernyyayev and sowers brothers Yakymenko and Mykola Kalatura won first place in a competition of sowing unit crews in the rayon." Spring checks up not only on equipment, readiness and field work pace, it also tests agricultural services and determines the level of agricultural practices. In Rozdolnenskiy Rayon crop rotation was reviewed with the result that stubble predecessors were decreased twofold. All winter crops here were top dressed with nitrogen fertilizer. Rozdol area workers plan to harvest 32 quintals of grain from each hectare, 5 quintals more than last year. ...The sounds of tractor engines fill the air of the Crimean steppe. More than 3,000 units are finishing up sowing early spring crops and grasses over an area of 117,000 hectares. But the main test is sowing row crops still ahead. Crimean area workers plan to sow more than 200,000 hectares of corn including 60,000 hectares of seed corn. Mechanized teams are in charge of growing valuable grain-forage crops. Most of them will struggle for a 100 quintal harvest of grain per hectare. [By V. Kovalenko] [Excerpts] [Kiev SIL'S'KI VISTI in Ukrainian 22 Mar 83 p 1] 9443

HARVEST DELAYS--Odessa Oblast--Farmers in the Kominternivskiy Rayon sowed 24,000 hectares of early spring crops in 96 working hours. Why is there a delay in this work in Frunzivskiy, Saratskiy and Belyayevskiy Rayons? Although Belyayevskiy Rayon was among the first to begin spring field work, sowing of early grain and feed crops was prolonged to almost 10 days. Each of the 380 seed drills sowed an average of only five to six hectares per day. Farms in Saratskiy Rayon prepared an accurate plan for spring field work fulfillment. According to the plan 422 seed drills should have worked in the spring fields. This number of units was capable of sowing 6,300 field hectares each day. The plan anticipated completion of early spring crop sowing in 5 working days. Yet, most farms did not fit into the proposed chart. The crews did not cover seed on even half the planned area every 24 hours. At a time when most oblast southern farms finished sowing early spring crops, in Saratskiy Rayon there remained almost 10,000 hectares to be sown of the planned 31,000 hectares. Such a delay in field work is inexcusable. Farms in Saratskiy Rayon have the best technological equipment in the oblast, and have experienced, well-prepared machine

operator personnel. There is a disturbing situation in regard to winter crop sowing in Frunzivskiy Rayon. In the beginning of March there were almost 30 power tractors out of order on farms with a generally weak economic level. Quite a few machines needed in the field were not adjusted on time. Sowing delays in Frunzivskiy, Belyayevskiy, Saratskiy and several other Odessa rayons lead to losses in valuable soil moisture reserves which are unusually limited as it is. Long experience shows that each day wasted by sowers leads to a two to three quintal grain shortfall from each hectare. This should be considered by all oblast farms since there is still a large extent of sowing to be done of sunflower, corn and vegetables. Oblast, rayon and agroindustrial association specialists must do everything to avoid further miscalculations like these which occurred in the first phase of field work. [By S. Shadar, correspondent SIL'S'KI VISTI] [Excerpts] [Kiev SIL'S'KI VISTI in Ukrainian 25 Mar 83 p 1] 9443

NEW SUGAR BEET VARIETIES--Only high quality seed will be used by Ukrainian farmers on sugar beet plantations. Collectives from all three of the republic's plants are now finished with the delivery of the last portions of 258,000 quintals of sowing material to kolkhozes and sovkhozes. Three-quarters of it meet first class requirements. In specialized enterprises the tiny balls were carefully sorted, then calibrated and polished and then "dressed" in a protective, nutritious coating. This type of seed grows quickly and has protection against diseases and pests. "The republic has taken a course towards more extensive growing of valuable varieties which can yield more sugar and can be utilized on 'industrial' fields," stated Ukrtsukroprom seed growing section chief A.H. Matsebera to the RATAU correspondent. The farms received more than twice the amount of these hybrids than at the beginning of the five-year plan. There are enough of them to sow hundreds of thousands of hectares. Among new plant varieties are: single seed beets "Yaltushivskiy 30", "Bilotserkivskyy 34", and "Bilotserkivskyy 40", "Veselopodolyanskiy 29", "Uladivskiy 35". Areas under "Yuvileynyy" variety are expanding markedly. All new varieties are sown according to the recommended plant density which is very important for machine technology and have a high germination power. It is expected that the final product will be approximately seven quaintals per hectare more than from hybrids used before. The preparation of good seed is one of the important reserves which were put into effect in accordance with the republic complex, scientific-technical program "Tsukor". They will help rural workers in the fulfillment of high socialist obligations. [By T. Arkushenko] [Text] [Kiev SIL'S'KI VISTI in Ukrainian 19 Mar 83 p 1] 9443

SUGAR BEET SOWING--Workers in Yampil'skiy Rayon were among the first in Vinnitsa area to finish sowing peas, barley and vetch. Today 97 mechanized teams, of which almost half work on the basis of a collective contract, started sowing sugar beets. According to I.D. Steblyna, first secretary, Yampil'skiy Rayon party committee, sugar beets have already been sown on the first thousand hectares. Beet growers in Gusyatynskiy Rayon, Ternopol Oblast and Chemerovetskiy Rayon, Khmelnitskiy Oblast have also taken out their machinery into the fields. [Excerpts] [Kiev SIL'S'KI VISTI in Ukrainian 23 Mar 83 p 1] On a number of farms in Chernovtsi, Vinnitsa, Khmelnitskiy and Ternopol Oblasts sugar beets are being sown. [Excerpts] [Kiev SIL'S'KI VISTI in Ukrainian 25 Mar 83 p 1] 9443

AERIAL TOP DRESSING--Rovno, 19 Mar--Following an abundant amount of spring rainfall, the grain growers commenced their spring operations. They are receiving a great amount of assistance from the aviators. At the Kolkhozes imeni Lenin, imeni Kirov, Rassvet and Pravda in Dubnovskiy Rayon, the aviators applied liquid complex fertilizers to all of the winter crops. Many years of experience have shown that the increase in yield per hectare resulting from such treatment is on the order of 2-3 quintals of grain. The winged assistants of the grain growers are working on fields at kolkhozes and sovkhozes in Mlinovskiy, Rovenskiy and Chervonooarmeyskiy Rayons. [by N. Tereshko] [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 20 Mar 83 p 1] 7026

MOISTURE CHARGING OF SOIL--Tbilisi, 4 Feb--Fifty-five thousand hectares, more than half of the planned area, have been moisture charged in Georgia. This season, the tempo of moisture-charging irrigation is somewhat higher than last year. This work is proceeding successfully on the Shirak Steppe--the main granary of Georgia. The Sioni and Tbilisi reservoirs on the Iori River are ready to provide water for the irrigation systems. By the time of spring field work, 100,000 hectares of fields, orchards, vineyards and vegetable plantations of Georgia will have been fully "charged" with moisture. This is 10,000 hectares more than planned. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 5 Feb 83 p 1] 7697

EARLY SPRING IN GEORGIA--Tsiteli-Tskaro (Georgian SSR), 7 Feb (TASS)--Spring has come to Georgia early on the calendar. Shirak-Steppe farmers have begun planting barley, oats and rye. The first to go to the fields were workers of Tsiteltskaroyskiy Rayon--the chief provider of grain in the republic. They provide one-fifth of the entire harvest. Leading farms produce 35-39 quintals per hectare, and this year they have planned a target of 40 quintals. On the eve of the sowing, an inspection was made of preparations for the field work. It helped to redistribute sowing material among the farms and to disclose all reserves. For the first time this year there was used progressive cultivation of grain fields without the use of a moldboard. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 8 Feb 83 p 1] 7697

EARLY POTATO PLANTING--Tbilisi, 23 Feb--This year, Georgia's specialized sovkhozes will provide for all-union stocks 69,000 tons of early potatoes. More than 55,000 tons of this amount will be growing by the potato farmers of Bolnisskiy Rayon. Here 400,000 more hectares than last year have been set aside for this crop. At the present time, the farms of Bolnisskiy, Marneul'skiy and other rayons of Georgia have begun the planting of early potatoes. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 24 Feb 83 p 1] 7697

PROVISION OF RELIABLE MOISTURE SUPPLY--Telavi (Georgian SSR), 28 Feb (TASS)--The snowless winter has not affected winter sowings on the farms of Telavskiy Rayon: during the 3 winter months, the irrigation system has operated here with a full load. Telavi land-improvement workers were the first in the republic to complete winter irrigation of fields. All the interfarm and intrafarm irrigation systems are operating in the republic. With their aid, a reliable supply of moisture in the soil is being created. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 1 Mar 83 p 1] 7697

WINTER MOISTURE CHARGING--Georgia's land-improvement workers are engaged in carrying out in advance of last year moisture-charging irrigation operations. The moisture-charging of winter sowings is proceeding most intensively on the Shirak Steppe--the republic's main grain fields. By the beginning of spring field work, 100,000 hectares of fields, orchards and vineyards will have been provided with water. [Text] [Moscow TRUD in Russian 15 Jan 83 p 1] 7697

HAIL IN SOUTH OSETIA--Nature has once more provided a surprise for the republic's workers. In the evening and night of 9 September, hail and torrential rains with squall-like winds descended on South Ossetia. The elements did a great deal of damage to farms of Tskhinval'skiy and Dzhavskiy Rayons. More than 200 hectares of vineyards, fruit orchards, vegetable gardens and sowings of melon crops of kolkhozes of the villages of Achabeti, Kekhvi, Kemerti, Dvartsemi of Yeredvskiy Sovkhoz of Tskhinval'skiy Rayon. The private plots of local citizens also suffered. Effective measures are being carried out to eliminate the consequences of the hail damage. For the collection of fallen fruit, the entire adult population has been mobilized. Damaged areas of kitchen gardens are being cleared and plowed for planting on them radishes, table greens and melons. The elements also caused serious damage to sowings in Dzhavskiy and Rokatskiy sovkhozes of Dzhavskiy Rayon. On the streets of Dzhava Village, the hail cover reached a thickness of 10 centimeters. Electric transmission lines were damaged and communications were cut off. In Tskhinval'skiy and Dzhavskiy Rayons, staffs were created for the elimination of the consequences of the damage by the elements. (GruzINFORM). [Text] [Tbilisi ZARYA VOSTOKA in Russian 11 Sep 82 p 4] 7697

FLOODING IN ORDZHONIKIDZEVSKIY RAYON--Ordzhonikidze, 10 Sep--From morning on, there was no sign of bad weather. The heat was unusual for this time of the year. But toward the end of the day, the wind arose, the sky became covered with leaden clouds. The first large drops of rain fell on the ground, then torrents of water broke loose. The heavy downpour continued for half an hour. Mountain streams carried with them stones and uprooted trees. In the rayon center, central streets--Lenin, Ordzhonikidze, Buachidze, Tabukashvili and others--were flooded. The torrents of water washed away asphalt surfacing. The movement of transport in the direction of the villages of Sagandzile, Vani, Legvani and Merelisi ceased. The water rose and entered the first stories above the ground floor of dwellings and administrative buildings. "In recent months, we have adjusted ourselves to the caprices of the weather, but even oldsters do not remember such flooding," said Eliso Beridze, chairperson of the ispolkom of Ordzhonikidzevskiy Rayon Soviet of People's Deputies and chief of the staff for consequences of the flooding, to the GruzINFORM correspondent. "Both young and old took part in cleaning streets and other operations. There particularly distinguished themselves workers from Ordzhonikidze Combine for Local Industry, personnel from the Ordzhonikidze Village Soviet, the rayon department of internal affairs and amalgamated fire-fighting detachments. Machine operators Vitaliy Lursmanashvili, Nodar Talakhadze, Vano Bantsadze and others worked the entire night cleaning the streets. This work is continuing. At the present time, enterprises, institutions, schools, kindergartens and other facilities are operating on a regular basis. Life has assumed

its customary channel. A commission is determining the scale of the damage done. (GruzINFORM). [Text] [Tbilisi ZARYA VOSTOKA in Russian 11 Sep 82 p 4] 7697

FROSTS IN WEST GEORGIA--The night of 23 February, the mercury column of the thermometer in the vicinity of Zugdidi and the village of Lata dropped to 6° of frost, while in the rest of the subtropical zone there was noted a temperature drop to minus one and minus four degrees. "The acute onset of cold throughout all West Georgia is due to the incursion of Arctic air masses from the west," said GruzINFORM correspondent and chief of the Tbilisi Weather Bureau of the Georgian Republic Administration for Hydrometeorology and Control of the Natural Environment N. Beradze. "This process began 20 February. The incursion of supercold air masses was accompanied by big snowfalls. In a number of rayons, wet snow caused interruption of communications and breaking of power transmission lines. In Lanchkhuti and Samtredia on the night of 23 February the depth of the snow cover was 10 centimeters, in Ochamchira and Tskhkaya--15, Babushara and Zugdidi--19, Anaseuli and Tkibuli--24, Tsageri--31, Lentekhi--39, Khulo--59 and Mestia--66 centimeters. In East Georgia, there was little snowfall on these nights. The sharp deterioration of the weather in West Georgia was predicted in advance by the specialists of Tbilisi Weather Bureau, and all interested organizations were informed of this. In West Georgia, very warm weather was observed during the first half of February. The average daily air temperature exceeded the many-year norm for this time of the year by 3-4°. On some days, maximum air temperature reached 20-22° Celsius. While this elevation did not bring on vegetation of subtropical cultures, it reduced their resistance to cold. For this reason the onset of cold presents a big danger to citrus and requires adoption of measures for their protection. This is all the more so as no easing of the frost is foreseen in the immediate days ahead. [Text] [Tbilisi ZARYA VOSTOKA in Russian 24 Feb 83 p 4] 7697

POLTAVA OBLAST SOWING OPERATIONS--Spring arrived early this year. It accelerated by 2 weeks the sowing of the grain crops. Today many farms are commencing their corn sowing work. The Kolkhoz imeni Il'ich, headed by Hero of Socialist Labor Vasiliy Alekseyevich Bogma, has planned a tense program. The plans call for the sowing of corn for silage and groat crops to commence on the special day set aside for communist work. The sugar beets warrant special mention. This year the sowing and tending of this crop are being carried out by contractual brigades. The machine operators have set their sights on one goal -- for the rayon as a whole, to obtain no less than 300 quintals per hectare this year. The tending of the beets will for the most part be completed by the day set aside for communist work. There is still another great task remaining to be carried out by the rayon's workers -- that of completing the preparation of the summer camps for converting the livestock over to the pasture method of maintenance. /by N. Slin'ko, 1st secretary of the Shishatskiy Rayon Committee of the Communist Party of the Ukraine, Poltava Oblast/ [Text] [Moscow TRUD in Russian 16 Apr 83 p 1/ 7026

EARLY SOWING PERIODS--Kiev, 6 Apr--Yesterday the Ukrainian farmers completed their sowing of peas. Approximately 1.4 million hectares are now sown in this crop -- 200,000 more hectares than last year. One peculiarity of this present season is the earlier sowing periods. Mineral fertilizers are being applied to the soil simultaneously with the seed. A preference has already been shown for such proven varieties as Topaz, Tenaks, Voroshilovgradskiy Yubileynyy and Zelenozernyy-1. Promising innovations have also made an appearance on the multiplication fields. More than 10 percent of the crop rotation plan fields in the republic have been set aside for pulse crops. In addition to supplementing the supplies of feed protein, they also serve as excellent predecessor crops for winter wheat. /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 7 Apr 83 p 1/ 7026

EARLY COMPLETION OF SOWING--Shostkinskiy Rayon, which is in Sumy Oblast, is one of the republic's most northern rayons. At the end of March, snow still lay on the hillsides and in the ravines. The sowing units could not be moved out onto the fields until early April. But long before this all of the farms had moved their equipment up to the readiness line. The fully staffed complexes joined in the work just as soon as the spring crop sowing period arrived. The workers at the rayon center long ago renounced providing specific and meaningful assistance to the farmers. Thus I was somewhat surprised to learn that the farms in Shostkinskiy Rayon had completed sowing their barley and oats ahead of schedule. Their work was not hampered by rainfall. /by S. Fedorov/ /Excerpts/ /Moscow TRUD in Russian 14 Apr 83 p 1/ 7026

DIFFICULT TASK--Velikonovoselkovskiy Rayon, Donetsk Oblast--The autumn drought, the snowless winter and the rather severe frosts during the first 10 days in March subjected our fields to a stern test. We have not sown more than 1,000 hectares in winter wheat at the kolkhoz. The seed on 200 hectares did not produce seedlings and these areas had to be resown. Moreover, the amount of moisture in the soil is one half the normal amount and eastern winds are blowing here, winds which tend to dry out the land. The task confronting us is a complicated one: to carry out a considerably greater volume of work than last year without delay. A chief concern is to carry out the sowing work on a high agrotechnical level, so as to obtain no less than 33 quintals of grain per hectare as planned. Despite the difficult and unusual conditions, our farmers did not become confused. Based upon the data of chemical laboratories and the recommendations of scientists, the specialists at the kolkhoz, headed by the chairman E. Yanat'yev, developed an effective program for agrotechnical actions. No less than 10 tons of organic fertilizers were applied per hectare, sufficient quantities of ammonia liquor and mineral fertilizer were procured, good quality seed and herbicides were laid away, certificates are available for the fields and the movement routes for the vehicles have been planned. A detachment of experienced machine operators has been organized. They have but one goal: during the early part of April, to finish sowing their early spring crops and to complete the "repair" work on their winter fields. This means that each unit must fulfill more than one and a half of its usual norm. On the first day of sowing, I coped with my task: I sowed 54 hectares of barley instead of 33. The tempo of the field work being carried out in the Donetsk Steppe region is increasing. /by M. Kozlovskiy, tractor operator at the Kolkhoz imeni Kalinin, Velikonovoselkovskiy Rayon, Donetsk Oblast/ /Text/ /Moscow TRUD in Russian 7 Apr 83 p 1/ 7026

SPRING CROP SOWING COMPLETED--Kiev, 9 Apr--Today the Ukrainian machine operators completed sowing their early spring crops. On an area in excess of 4.5 million hectares, the seed for barley, oats, peas and forage cereal and pulse mixtures was planted in arable soil. At the same time, undersowing and resowing work was carried out on a portion of the winter crop tracts. The increasing volume of work was carried out rapidly and in a high quality manner. In many rayons, only 60-80 working hours were required for accomplishing this. This success was promoted by the large group method of equipment usage and by the use of wide-swath and multiple operation units. Taking advantage of the fine weather, the republic's farmers are presently accelerating their sowings of later crops. /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 10 Apr 83 p 1/ 7026

MECHANIZED TEAMS TO GROW CORN--Odessa, 2 Apr--This year the oblast's corn growers must cultivate corn on 250,000 hectares. The soil is warming up more rapidly with each passing day. Haste is required. The machine operators in Tatarbunarskiy, Kiliyskiy, Saratskiy and other rayons are cultivating and harrowing their fields and supplementing the supplies of fertilizer in the soil. More than 60 mechanized teams will grow corn under irrigation conditions, where at the present time water supply irrigation is being carried out. /by A. Soldatskiy/ /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 3 Apr 83 p 1/ 7026

VALUABLE SOWING EXPERIENCE--Kominternovskoye, Odessa Oblast--Teams of the technical service, created for the very first time by raysel'khoztekhnikz, are ensuring reliable operation of the sowing units in Kominternovskoye Rayon. They have been assigned to 26 mechanized detachments which operate on a group contract basis. This has aided the farmers in sowing early spring crops on more than 20,000 hectares in just 96 hours. In accordance with a recommendation by the council of the oblast agroindustrial association, the experience accumulated by the workers in Kominternovskoye Rayon is being introduced into operations on many farms in the Black Sea region. /Text/ /Moscow TRUD in Russian 13 Aug 83 p 1/ 7026

TWO OPERATIONS SIMULTANEOUSLY--Water erosion is not too frightening an even on fields where use is made of sowing machines that are equipped with slotting devices. Today the machine operators in Kotovskiy Rayon in Moldavia completed their preparation of this equipment. Sowing machines with slotting units make it possible to carry out two operations simultaneously -- furrow sowing and loosening of the soil packed down by tractor tracks. Well tilled soil absorbs moisture rapidly. /Text/ /Moscow IZVESTIYA in Russian 20 Feb 83 p 1/ 7026

SPRING FIELD WORK--Leovskiy Rayon--Prior to moving out onto the fields, we held a meeting with the 1st secretary of the rayon party committee M. Budishtyan. "Just as in other rayons, spring for us is very complicated and very difficult" stated Maksim Anan'yevich, "And we still do not know what surprises it may hold in store for us. Nevertheless, we have not sat still with arms folded. We have done everything that we could possibly do in behalf of the crops." In short, spring has truly come into its own and today there is no more important work for the farm workers than that of carrying out the spring field work as rapidly as possible and in a high quality manner. /by R. Abakov/ /Excerpts/ /Kishinev SOVETSKAYA MOLDAVIYA in Russian 20 Mar 83 p 1/ 7026

SOIL ENRICHMENT WORK--Kishinev, 11 Mar--During these early spring days, as never before, a great amount of activity is taking place out on the fertility routes of Moldavia. Specialized mechanized detachments in Brichanskiy, Floreshetskiy and Yedinteskiy Rayons fulfilled their 2-month plans ahead of schedule and are continuing to haul organic fertilizer. In many rayons throughout the republic, extensive use is being made of additional reserves for enriching the fields with organic materials. For example, the Brichany farmers and agricultural chemists organized the production of compost from liquid manure and transported soil from numerous ravines and in Kaushanskiy and Ungenskiy Rayons use was made for this purpose of farmyard manure and sludge obtained from lakes and ponds. Almost 2.5 million tons of organic material have already been delivered to plantations throughout the republic -- this is 500,000 tons more than by this same period last year. /by N. Marfin/ /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 12 Mar 83 p 1/ 7026

PURSUIT OF HIGH YIELDS--Moldavian SSR--This year the spring crop fields of Moldavia exceed 1.1 million hectares for the first time. The farmers have vowed to obtain 50 quintals of corn grain, 25 quintals of sunflower seed and more than 20 quintals of pulse crops per hectare. Having commenced the busy period of work earlier than last year, the field workers are devoting a maximum amount of effort towards ensuring that fine yields are obtained in all areas. /by N. Marfin/ /Excerpt/ /Moscow SEL'SKAYA ZHIZN' in Russian 16 Mar 83 p 1/ 7026

ASSISTED BY PARTNERS--Kishinev, 15 Mar--The Moldavian farmers have commenced the sowing of spring crops in all areas. On the very first day, the grain growers in Vulkaneshtskiy Rayon planted pulse crop seed on almost 1,000 hectares. Those sectors where the soil ripens earlier were sown first. The weaker farms received assistance from the machine operators of the rayon Moldsel'khozkhimiya association and raysel'khoztekhnika. This year the republic's pulse crop fields are being expanded considerably. The sowings of peas, for example, are being increased by almost twofold. It is expected that 536 sowing complexes will be able to cope with this increasing volume of work by employing two and three sowing machine units and with each of them carrying out 3-4 operations simultaneously. /Text/ /Moscow PRAVDA in Russian 16 Mar 83 p 1/ 7026

SPRING SOWING COMMENCES--The farmers of Moldavia have commenced sowing their spring crops in all areas. /Text/ /Moscow EKONOMICHESKAYA GAZETA in Russian No 13, Mar 83 p 3/ 7026

PULSE CROP ACREAGE EXPANDED--Kishinev--Yesterday the farmers of Moldavia commenced sowing their spring crops in all areas. This year the republic's pulse crop fields have been expanded considerably: the sowings of peas alone have been increased twofold. It is expected that 536 sowing complexes will be able to cope with this increasing volume of work by employing two and three sowing machine units and with each of them carrying out 3-4 operations simultaneously. The farmers intend to complete their sowings of early spring crops on an area of 70,000 hectares in just 4-5 working days. /Text/ /Moscow TRUD in Russian 16 Mar 83 p 1/ 7026

EARLY POTATO PLANTINGS--Rovno, 8 Apr--The farmers at the Sovkhoz imeni XXV S"yezda CPSU in Goshchanskiy Rayon have commenced their mass planting of potatoes. Each year, no less than 300-350 quintals of tubers are obtained here from each hectare. The increase in yield exceeds 60-70 quintals per hectare precisely owing to the early planting periods. Mechanized teams are cultivating this crop with no expenditures of manual labor. The profitability for the past two years exceeded 163 percent. This year potatoes will be planted throughout the oblast on 34,500 hectares. The plans call for the group contract method to be introduced into use on practically all of the plantations. /by N. Tereshko/ /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 9 Apr 83 p 1 / 7026

EARLY SEEDLINGS--Frunze, 25 Dec--Taking advantage of the warm weather in the valleys, the republic's vegetable growers have moved their sowing units out onto the fields. The seed for radishes, carrots, table beets, onions, dill and other winter-hardy varieties has been planted on more than 100 hectares. Experiments have shown that this seed, even when placed in frozen ground and despite considerable cold, safely endures the winter conditions. By taking full advantage of the thaw waters and the initial spring rains, they furnish early and healthy seedlings even during unfavorable spring conditions. This makes it possible to extend the vegetable production line operation by 1 month. /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 26 Dec 82 p 1 / 7026

ICE-COVERED FIELDS--Frunze--The farmers of mountainous Kirghizia have made an ally of the cold weather. The workers of kolkhozes and sovkhozes in Naryn Oblast have commenced forming an icy coat of armor on the fields. The water of unfrozen rivers is being directed onto perennial grass plantings, plowed tracts and into orchards, where it will be "preserved" until spring. Ice is also being used to cover arable lands in the Chu and Talas river valleys and in Issyk-Kul Oblast. The plans call for this agricultural method, which furnishes an increase in yield of up to 15 percent, to be employed on 800,000 hectares. /Text/ /Moscow GUDOK in Russian 10 Dec 82 p 1 / 7026

AERIAL TOP DRESSINGS--Osh--The aircraft of agricultural aviation have commenced applying a top dressing to the winter crops on fields in southern Kirghizia. Nitrogen fertilizer will be applied to an area of 94,000 hectares. The republic's aviators have resolved to complete all work on the winter crop fields as early as possible, within 2 weeks. /Text/ /Moscow GUDOK in Russian 10 Feb 83 p 1 / 7026

KIRGHIZIA GROWING CONDITIONS--Farming in Kirghizia is concentrated in intermontane hollows and depressions located at heights of from 400-600 to 2,000-2,500 meters above sea level. Cotton and tobacco are grown in the southern part of the republic and in the northern part -- sugar beets and medicinal crops, with the best irrigated land being made available for this purpose. Grapes and fruit crops are grown in zones which are ensured adequate heat, with or without irrigation. Grain crops are sown on non-irrigated lands and in irrigated crop rotation plans with technical crops. Moreover, in low and medium height valleys, where the frost-free period is prolonged, winter and spring grain crops and corn are cultivated (the latter only under irrigation). In the high alpine valleys, where the frost-free period is brief

and the summers cool (with severe winters prevailing in a number of rayons), only spring grain crops, mainly barley, are grown. Thus the task of farming throughout the republic consists of achieving maximum increases in the production of feed, forage and bread grain and also raw materials for the food and light industry. The real basis for raising cropping power, increasing the gross yields for the agricultural crops and improving their quality is that of creating varieties which are most adaptable to the conditions found in this mountainous region and which meet the requirements for production and production specialization. /Text/ /Moscow SEL'SKOKHOZYAYSTVENNAYA BIOLOGIYA in Russian No 6, Nov-Dec 82 p 824/ [COPYRIGHT: Izdatel'stvo "Kolos", "Sel'skokozyaystvennaya biologiya", 1982] 7026

JUNIPER TREE PROTECTION--Frunze--A snow avalanche which fell from the Talas Ridge in the mountains of Kirghizia did not interfere with motor vehicle movement along the Talas to Toktogul route. Its progress was blocked by a juniper tree forest which stretched out along the rocky slopes. Juniper evergreen trees provide eternal service for people. The vast areas on which they have been planted in this region of irrigated farming fulfill an important water-regulating function -- the accumulation of winter precipitation. The tree-like bushes protect the soil against erosion and weathering and they protect the fields, orchards and vineyards against floods and snow avalanches. The mountain people are undertaking all measures necessary for protecting and expanding the tracts of these trees. Specialized nurseries have been created for cultivating seedlings for this forest crop. The junipers grow slowly but serve man for up to 3,000 years. A great amount of attention has been given to this miracle tree in the forest code for Kirghizia. As a result of protective measures, the juniper trees now occupy an area of almost 250,000 hectares in the Tyan'-Shan region. /by V. Polukarov/ /Text/ /Moscow TRUD in Russian 1 Dec 82 p 4/ 7026

MOUNTAIN VALLEY SOWINGS--Frunze, 22 Feb--Today the farmers in the Chú River Valley commenced sowing their grain crops 15 days earlier than usual. More than 60 all-round mechanized detachments have moved out onto the kolkhoz and sovkhoz fields; they have formed the spring crop fields on the initial thousands of hectares. The grain growers are following the usual schedule -- as the soil ripens, they are advancing higher up into the foothills and carrying out sowing work using select grain. This method has been checked by science and leading practice. For each "level" of the high alpine fields, the scientists have created highly productive varieties of wheat and barley and they have proposed the use of a highly effective technology for cultivating them. /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 23 Feb 83 p 1/ 7026

EARLY FIELD WORK--February is at hand and spring-like weather prevails. During the day the air warms up to 12-15 degrees. The weather forecasters have stated that field work will commence earlier than usual this year. At the present time, importance is being attached to utilizing this favorable period for accumulating as much moisture in the soil as possible. This is especially important in view of the fact that during the autumn and winter period the amount of moisture in the 1-meter layer of soil on irrigated lands was low by 15-30 percent. /Excerpt/ /Frunze SOVETSKAYA KIRGIZIYA in Russian 10 Feb 83 p 1/ 7026

ABUNDANT SNOWFALL--Cholpon-Ata--Elderly residents in Issyk-Kul Oblast could not recall such an abundant amount of snow ever having fallen in the past during the course of just one day's time. And it is no wonder -- according to the weather forecasters, nothing like this had ever happened over the past 60

years. In the resort zone and in its center, the city of Cholpon-Ata, just within the span of 24 hours -- 26 October -- 800 mm of precipitation or four times more than the monthly norm fell. The height of the snow cover here reached 95 cm and along the northeastern portion of the coast it exceeded one and a half meters. Although the snow drifts did hinder the operations of municipal transport, all of the remaining enterprises and organizations in the city of Cholpon-Ata and the health resorts along the coast functioned normally. This natural meteorological phenomenon was caused by the republic's territory being invaded by a mass of cold Arctic air. /by G. Sobolev/ /Text/ /Frunze SOVETSKAYA KIRGIZIYA in Russian 29 Oct 82 p 4/ 7026

SNOW RETENTION WORK--Przhevalsk, 25 Jan--The farmers in Issyk-Kul Oblast are using the abundant snow which recently fell in the central Tyan'-Shan region in behalf of the crops. In the oblast's eastern zone, the kolkhozes and sovkhozes rapidly carried out snow retention work on 10,000 hectares. On some tracts the mechanized detachments pack the snow and on others they are making white ridges. The ridging is being carried out perpendicular to the wind's direction and in those areas where the flow of air has no definite direction, use is being made of the square method. As a result of this snow retention work, each hectare of land will receive up to 60 cubic meters of moisture in the spring. Prior to the end of the winter, the farmers in the Issyk-Kul Oblast region -- the chief grain region of Kirghizia -- will have carried out snow retention work on 20,000 hectares of mountainous arable land. /by A. Shkeyev/ /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 26 Jan 83 p 1/ 7026

INCLEMENT WEATHER--Talas, Kirghiz SSR--An increase in the numbers of wild animals in the vast forests of the Chatkalskiy Ridge -- a natural nursery for birds and animals in the Tyan-Shan region -- was reported by hunting officials who had completed an animal census. Meanwhile, herds and flocks of those who inhabit the mountains were threatened and their ranks would have been depleted were it not for the assistance provided by people. Violent snowstorms had prevailed here for several days and thereafter 30 degrees of cold weather set in. In the forest reserves, where argali, roe deer and wild boars abound, the bushes and grass were covered by a cover of snow 1 meter deep. Despite the inclement weather, workers from the hunting inspectorate, foresters and senior students from local schools put on their skis and headed for the mountains. There, back during the summer, they had placed in storage 400 tons of hay, 14,000 birch besoms and 18 tons of potatoes. As a result of the harmonious efforts of these nature lovers, animal "dining areas" were opened up in the forests and the springs were cleared of all ice. The danger to the animal world had been eliminated. /Text/ /Moscow TRUD in Russian 29 Jan 83 p 4/ 7026

NEW AVIATION SUPPORT BASE--Kishinev--A support base for agricultural aviation has been placed in operation. In Kaluga, alongside an aircraft runway, a number of installations have been erected: field aviation repair workshops, storehouses for spare parts and fuel and lubricating materials, a radio station and units for the refueling of machines. Today the helicopter agricultural chemists no longer have to carry out distant flights from the southern part of the republic to their port of registration in order to obtain preventive maintenance for their equipment. As a result of this measure alone, the efficiency of use of helicopters for carrying out agricultural work has been raised by 20 percent. /Text/ /Moscow TRUD in Russian 15 Jan 83 p 1/ 7026

TOP DRESSING APPLIED--Kishinev, 15 Feb--The farmers in the main grain growing regions of Moldavia have completed applying a top dressing to their winter crops. The machine operators, who apply nitrogen using sowing machines, received assistance from detachments of agricultural aviation. In order to guarantee generosity on the part of the winter fields, the decision was made to apply top dressings on two occasions to the crops on an area in excess of 300,000 hectares. /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 16 Feb 83 p 17  
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## LIVESTOCK FEED PROCUREMENT

### MEASURES TO INCREASE ALFAFA SEED PRODUCTION IN RSFSR URGED

Moscow SEL'SKAYA ZHIZN' in Russian 7 Apr 83 pp 2-3

/Article by A. Semin, chief of the Main Administration of Seed Breeding of the RSFSR Ministry of Agriculture, candidate of biological sciences: "About Spar-ing and Bountiful Alfalfa"/

/Text/ There are agricultural crops whose cultivation has an especially great effect both on the efficiency of farming and animal husbandry. Alfalfa is one of them. Today our story is about its merits and biological characteristics, about the significance of its cultivation for a rise in the fertility of fields and in the productivity of farms and about the possibilities of significantly increasing its seed and general productivity in the country's various zones.

Both farmers and livestock breeders know well what outstanding feed merits alfalfa has. In 1 ton of pea grain there are 2 quintals of protein and in 1 ton of alfalfa hay, about 1½ quintals! Two alfalfa harvests per summer--this is the minimum even in the northern regions of its cultivation--make it possible to obtain much more protein per hectare than peas give. In the south with irrigation alfalfa is mowed five or six times in a season. In the content of carotene, vitamins and mineral substances most fodder crops cannot compete with alfalfa and its green mass is suitable for the preparation of protein-vitamin meal, hay, silage and haylage.

The merits of this crop were highly valued even 5,000 years ago. However, in the past only individual countries were able to attain its sufficiently wide-spread cultivation on their fields. The chronic shortage of seeds caused primarily by the difficulties in obtaining them is a stumbling block for many. In our country in connection with the increase in the livestock and poultry population on kolkhozes and sovkhozes the demand for alfalfa seeds has also increased sharply during the last decades. The need of the farms in the RSFSR nonchernozem zone, where work on land reclamation is being carried out in significant volumes and areas under perennial grass are being expanded significantly, for them has increased especially.

#### Why Is There a Shortage of Seeds?

After the issue of the decree dated 4 November 1976 of the CPSU Central Committee and the USSR Council of Ministers "On Measures for the Further Improvement

in the Selection and Breeding of Seeds of Grain and Oil Crops and of Grasses" in the Russian Federation measures were taken to improve the breeding of seeds of all crops, including alfalfa. In 1977 the republic's farms obtained 7,300 tons of seeds of this crop--27 percent of the envisaged amount. The following question arose involuntarily: Why so little?

We have analyzed the organization of seed breeding and have reached the conclusion that the fundamental reason lies in its obsolete organization. Almost all alfalfa seed plots are not established especially, but are assigned, so to speak, in a working order from areas sown with fodder. Alfalfa seed breeding is dispersed. More than 1,500 farms are engaged in it, assigning only small plots for seed production. In practice, special agricultural techniques have never been observed on them. Therefore, only during droughty years, when there was an acute moisture deficit on crowded fodder areas, the seed harvest reached an average of 50 to 70 kg per hectare. During wetter years there was a vigorous development of the vegetative mass, but the formation of generative organs was suppressed.

What did scientists recommend? They proposed the establishment of seed plots with wider row spacings and a seeding rate reduced by one-half as compared to that practised during sowing for fodder purposes--8 to 10 kg per hectare. This method, as workers of scientific research institutions maintained, would make it possible to annually obtain as many alfalfa seeds as envisaged. For a long time, however, it was impossible to organize their cultivation according to such techniques on all farms.

In 1977-1978 a total of 320 farms specialized in its seed breeding, including about two-thirds, in North Caucasus and the Volga Area. Seed plots began to be established by the indicated method and in 1978 they were established on 53,000 and as of 1979 on 100,000 to 105,000 hectares. Areas under alfalfa harvested for seeds throughout the Russian Federation were expanded from 193,000 to 250,000 hectares, including with irrigation. Whereas in 1977 it was watered only on 12 percent of the area, in 1982, on more than one-third.

Two base schools were established for the training of personnel of seed breeders and 1,080 agronomists took a course there. Furthermore, seminar-conferences--zonal or at the Exhibition of USSR National Economic Achievements--were held annually. This also produced results. The gross output of alfalfa seeds began to grow gradually. In 1978 it totaled 11,300 tons (47 percent of the plan), in 1979, 14,000 tons (62 percent) and in 1980, 16,000 tons (67 percent of the plan). However, fluctuations in the yield, as before, remained significant. During wet years it was lowered to 20 or 30 kg per hectare, but every year completely sterile seed plants became fewer and fewer. The specialization of farms in alfalfa seed breeding also disclosed the following pattern: The bigger the size of a seed field, the more difficult it is to gather the planned harvest on it, because there are three to four times as many set alfalfa pods along the edges as in the middle of the plot, where plants bloom especially beautifully for a long time--an obvious sign of lack of fertilization.

The Scientific Research Institute of Bee Keeping conducted an examination of the areas sown with this crop in a number of oblasts and it turned out that,

on the average, 8 to 10 percent of all the alfalfa flowers were pollinated and produced an ovary and during cool and rainy years, even less. Subsequent more detailed entomological investigations in alfalfa sowing oblasts disclosed the following fact: The entomofauna, in particular the insects that pollinate alfalfa, are being weakened and here and there are even dying out. The very structure and development of alfalfa flowers rule out fertilization by means of wind. An incompetent application of agents for the chemicalization of agriculture and an unsystematic grazing of livestock on meadows, forests and pastures led to a sharp reduction in the population of the useful entomofauna.

It became clear: Neither farm specialization in the production of alfalfa seeds and the further expansion of alfalfa seed areas, nor the new techniques of alfalfa cultivation and the transfer of seed plots to irrigated land will produce such an effect as that ensured by insects. If Russian seed breeders had succeeded in raising the harvests of alfalfa seeds to at least 2 quintals per hectare, it would have been possible to increase their output more than twofold and, at the same time, to reduce seed areas by approximately 100,000 hectares, thus vacating fertile arable land for fodder crops, for example, for alfalfa harvested for green mass and hay, and to produce no less than 200,000 tons of fodder units on this land.

#### Revealing Secrets of Nature

In 1979 we, a group of Soviet specialists, visited several Canadian farms in Saskatchewan and Alberta and became acquainted with fundamentally new techniques of cultivation of alfalfa for seeds. Canadian scientists, studying the experience of the United States, where this crop occupies almost 11 million hectares, developed its agricultural techniques as applied to local conditions. Seed plants began to be established in wide rows and with seeding rates reduced by one-half as compared to those practised in our country in the last few years. Fields are mandatorily sprayed with herbicides, once or twice in summer, with toxic chemicals and before harvesting, with desiccants. The pollination of flowers on all crops by means of artificially bred leaf cutting bees is a mandatory link. Adopting such techniques for 10 years, Canada has already forgotten how to import alfalfa seeds. Conversely, it has begun to export a good deal of them. Average harvests on seed plots have risen to 3 or 4 quintals.

In May 1980 the board of the RSFSR Ministry of Agriculture examined the set of measures for an increase in the production of alfalfa seeds and approved it. An extensive check of new technological methods, in particular such as sowing with a seeding rate of 3 to 4 kg of seeds per hectare and row spacings 70 to 90 cm wide, was organized. A total of 1.5 million cocoons of leaf cutting bees were imported from Canada. An experimental plan for two shops with laboratories for the storage, incubation and utilization of leaf cutting bees was prepared with the help of Privilzhgiprosel'stroy specialists. Each was designed for 20 million cocoons. These shops were built at the Krasnodar Scientific Research Institute of Agriculture imeni P. P. Luk'yanenko and at the Yershov Experimental Station of Irrigated Farming of the Scientific Research Institute of Agriculture of the South East (Saratov Oblast). Equipment was bought to outfit them and the institutes staffed laboratories with specialists.

During the first year with the new seeding rates, wide row spacings and use of leaf cutting bees Krasnodar Kray obtained an alfalfa seed harvest of 5 quintals per hectare and on the control plot without bees, 1.5 quintals. At the Yershov Experimental Station the seed output increased fourfold.

With due regard for the results obtained all the previous recommendations of scientific research institutions were reviewed and a mass changeover to the new techniques began. The ministry's specialists organized the planning of larger shops with laboratories designed for 100 to 150 million bee cocoons, selected for them similar Soviet equipment and the construction of shops in the Seed Breeding Saratovskoye Association, in Checheno-Ingushetia and in the south of Omsk Oblast not far from Rostov expanded. In 1981-1982 new batches of leaf cutting bee cocoons were purchased and in 1982 they were used on 1,069 hectares. Good results were obtained again.

It must be stated that we encountered unexpected and considerable difficulties during the performance of this work. We needed materials and equipment which we had to request from industrial ministries. It was also complicated to manufacture the bee keeping equipment itself, which differs fundamentally from the one to which we have become accustomed on ordinary apiaries. High-quality timber, polyurethane and polystyrene foam, zinc-coated fine-mesh wire cloth, woodworking machine tools, cutters and so forth were needed in significant volumes. A base for the drying and sawing of timber and for the manufacture of wooden plates with tunnels for bees, beehives and sheds for them was established in the Saratovskoye Seed Breeding Association. At the same time, more than 50 specialists were instructed in the use of leaf cutting bees.

All those who engage in this work in our country gathered at the Exhibition of USSR National Economic Achievements in February of this year to exchange their experience. A unanimous decision was adopted--to accelerate the breeding of leaf cutting bees and to consider the pollination of seed alfalfa and other crops with them, as well as with other artificially bred insects, a mandatory agricultural engineering method.

It must be stressed, however, that the use of leaf cutting bees is by no means a simple matter. It is not cheap. However, all the expenditures on the construction of shops with laboratories and on the production of the necessary equipment are fully recovered during the first year of utilization of insects.

In the Russian Federation by 1985 leaf cutting bees are to be widely utilized in North Caucasus and the Lower Volga Area--that is, where the base for industrial production of alfalfa seeds is being established. To provide these zones with the necessary equipment, preparatory work has begun in one of the timber industry establishments in East Siberia. A kind of pollination industry is to be established. Along with this sanctuaries and reservations for wild insects, that is, bumble and solitary bees, are being organized on seed growing farms. Small forest islets and virgin land plots are guarded against the application of toxic chemicals, passage of machines and grazing of livestock. Alfalfa is sown near by. Part of it is mowed at different periods in order to provide the useful entomofauna, including wild leaf cutting bees, which previously widely inhabited waste land, with pollen.

For a long time scientists debated whether the honey bee can pollinate seed alfalfa crops and 99 out of 100 denied such a possibility. The point is that the alfalfa flower acts as a catapult: As soon as the bee sits on it and tries to penetrate inside it, a column on which there is a pistil stigma is ejected from it. It hits the bee very strongly and the bee dumfounded by the stroke flies away and tries not to visit such flowers again. If sometimes it sits on alfalfa, it strives to do this somehow from the side. It "steals" the nectare, not pollinating the plant. The leaf cutting bee gathers from alfalfa mainly pollen for feeding its offspring and it has gotten used to sitting on the flower in such a way that, when it opens, the synema does not hit it and does not frighten it away. Such bees work on seed plots constantly and successfully.

In 1981 a group of our specialists visited the Boswell farm in California in the United States, where alfalfa seeds are produced on a modern industrial basis and alfalfa seed harvests on an area of 7,000 hectares totaled 9 quintals per hectare in the last 10 years. The farm uses its own techniques. All vegetation on fields, apart from alfalfa, is destroyed with herbicides and a week or two before thrashing seed plots are regularly sprayed with desiccants and standing plants dry out completely. After that they are thrashed.

In California all crops are pollinated with honey bees. They also contribute to an effective fertilization of alfalfa. Where the summer is hot, the flower opens more easily. A young bee that has just swarmed flies to alfalfa. Being hit by the column, it still manages to pollinate the flower. To attract and feed old and experienced bees, safflower--a plant rich in high-protein pollen and nectare--is usually sown next to alfalfa in strips. The high-grade feeding of bees on these crops contributes to a rapid and continuous appearance of the brood--the birth of new bees, which pollinate alfalfa. Since the varieties of American selection bloom for 3 months, approximately one-half of the flowers manage to pollinate themselves on plants during this period, which ensures a high output of seeds.

In our country it has been confirmed experimentally that a big density of honey bees on a hectare of alfalfa--eight to ten families--makes it possible under southern conditions, in particular in Krasnodar Kray, to greatly increase the seed harvest. Therefore, a number of seed growing associations and farms here have begun to build complexes for honey bees. They will pollinate alfalfa crops in the southernmost regions and leaf cutting bees are to be utilized widely on seed plots located to the north and east.

The pollination problem proved to be much more complex than we visualized it. The provision of farms with alfalfa seeds, as well as with clover and melilot seeds, depends on its solution. The production of buckwheat, oil sunflower seeds, apples, pears, plums, cherries, cucumbers, melons, watermelons and many other food products is also impossible without an active participation of insects and their correct utilization in agriculture largely depends not only on managers and specialists of kolkhozes and sovkhozes, but also on the help of schools, rural soviets, rayon executive committees and societies for the protection of nature.

## On Industrial Basis

Measures to improve alfalfa seed growing made it possible to gather 18,500 tons of seeds in 1981 and 22,100 tons in 1982 and to fulfill their production plan 84 percent. The mowed area under alfalfa increased by 190,000 hectares as compared to 1977, reaching 2.9 million hectares. Last year gross output made it possible to allocate more than 1,000 tons of alfalfa seeds for the republic's farms, mainly for the establishment of the fodder base for livestock breeding complexes and for sowing it on 70,000 hectares.

However, despite the fact that from 1977 through 1982 the production of the seeds of this crop increased more than threefold, as before, the provision of RSFSR farms with them is totally insufficient, their production plans are not fulfilled systematically and from the 1982 harvest only 2,500 tons of seeds were procured for state resources, while the plan called for 5,500. Nor are the needs of the nonchernozem area for them met. The calculations of scientists and specialists have shown that, in order to ensure the fulfillment of the food program, Russia's kolkhozes and sovkhozes must expand fodder alfalfa areas in field grass sowing to 5 million hectares and on meadows and pastures, to 1.5 million. By the end of the five-year plan it will be necessary to annually sow 32,000 tons of seeds and by 1990, a total of 35,000 tons.

How is it planned to attain such a level?

First, all commodity production of alfalfa seeds is to be developed primarily in regions of North Caucasus and the Lower Volga Area so that by 1990 the gross output of seeds is increased here to 28,000 tons (last year 11,500 tons were gathered). Measures to increase the output of alfalfa seeds from 2,500 tons in 1982 to 4,700 tons by the end of the five-year plan were developed in Krasnodar Kray. A program for the production of alfalfa seeds in a volume of 5,000 tons was approved in Rostov Oblast. This is more than twice as much as the oblast produces at present. The Checheno-Ingush ASSR intends to supply 4,000 tons of alfalfa seeds to the RSFSR stock.

A total of 220 tons of alfalfa seeds--the maximum quantity in all the years--were produced in Saratov Oblast in 1977. To improve grass seed growing production, the Saratovskoye Association was established there. It was made responsible for the production of grass seeds, including alfalfa. The measures taken in the oblast made it possible to increase the gross output of alfalfa seeds to 1,400 tons of seeds in 1981 and to 1,700 tons in 1982 and to begin their sale to kolkhozes and sovkhozes in the nonchernozem zone. Additional measures to also increase the production of the seeds of this crop in Volgograd Oblast and Stavropol Kray were developed.

Second, farm specialization in alfalfa seed growing will continue. Many of them annually gather 100 to 150 tons of seeds. However, specialized kolkhozes and sovkhozes still account for only 40 percent of the seeds produced in the republic. Therefore, special significance is attached to the establishment of the material and technical base for the treatment of grass seeds and to the construction of plants fitted with the most modern equipment. Their construction in Rostov and Volgograd Oblasts has been basically completed. In 1982 such plants were put into operation at Leningrad and Caucasian seed growing

stations for grass in Krasnodar Kray. This year a plant will also be put into operation at the Tikhoretsk Station and in 1984, at the Slavyansk Station. Five plants for the treatment of alfalfa seeds are being built in Checheno-In-gushetia. Three plants operate in Saratov Oblast and another plant of a capacity of 2,000 tons of seeds will be put into operation by the end of the year. In Stavropol Kray a plant is being put into operation at the Trunovsk Station in 1983 and will be put into operation at the Georgiyevsk Station in 1984. In all in the zone of alfalfa seed production 20 additional plants are to be built, which will make it possible to fully solve the problem of cleaning and treatment of seeds.

In order to annually produce 35,000 tons of alfalfa seeds, it will be necessary to increase not only the efforts of seed breeders, but of selectioners as well. Varieties developed during pre- and postwar years comprise more than one-half of the alfalfa crops intended for fodder. During the 10th Five-Year Plan only four new alfalfa varieties were regionalized in the RSFSR and all, in the Urals and Siberia, but alfalfa does not play a decisive role in the fodder balance here. The number of workers in divisions and groups engaged in grass selection has now increased and their working conditions are being improved. As before, however, they are overloaded with matters connected with the selection of other crops.

Alfalfa varieties with a blooming period of only 1 month are still being developed. Throughout the world efforts are made to prolong it significantly. It is time that we develop varieties that will bloom for 2 months and longer. It is necessary to begin selection for an improvement in the coloration of the alfalfa flower, intensification of its fragrance and increase in the content of pollen and nectar in it. In brief, the appropriate divisions and groups at experimental stations and in institutes should be strengthened and more fully utilized for alfalfa selection and the All-Union Academy of Agricultural Sciences imeni V. I. Lenin should give them more active methodological and other help.

#### In Order To Raise the Standard of Grass Sowing

A comparatively sparse grass stand on seed plots contributes to their accelerated overgrowing with weeds, especially during the first year, when cultivated plants are still small and weak. All crops have to be weeded manually and in 1 month they are again overgrown. Owing to this part of them die and many plots do not produce the biologically possible harvest.

For example, in the last few years Canadian farmers have reduced the seeding rate on seed plots to 0.5 or 1 kg per hectare. This proved to be useful. However, we cannot do this yet. The acute shortage of herbicides is one of the main reasons for this. Only one herbicide--2,4-DM--was assigned for use on alfalfa in 1982. However, there is not enough of it. Scientific research institutions established the high effectiveness of the action of the herbicides bzagran, eptam, eradicane, treflan and some others on alfalfa. However, they are not included in the list of preparations applied to alfalfa.

Nor has the problem of desiccation of seed crops been solved. The wet weather last fall led to the fact that in Rostov Oblast seed alfalfa was green until the end of October. It was impossible to thrash it for seeds without losses. If

desiccants of the region type had been effective, all standing plants could have been easily dried and harvested at the proper time. In order to preserve the alfalfa seeds that have already been harvested and the seeds of other grasses, we are forced to build ground-type dryers and to search for scarce air heaters and additional funds for fuel for them. All this is much more expensive than the output of desiccants would have been.

Seed breeders are also short of effective toxic chemicals for the protection of crops against pests. Clearer recommendations for the utilization of insecticides are also needed. In the article "Every Year With a Harvest" published in the newspaper SEL'SKAYA ZHIZN' I. Sulimovskiy, docent at the Odessa Agricultural Institute, continues to defend the fivefold treatment of alfalfa crops with toxic chemicals. At the same time, he reproaches the USSR Ministry of Agriculture, whose specialists oppose such a method of work. We consider the decision of the Scientific and Technical Council of the USSR Ministry of Agriculture on this problem correct. Can expensive insecticides be squandered in this way?

The ministry's specialists were on the Kolkhoz imeni Tatarbunarskoye Vosstaniye, to the experience of which I. Sulimovskiy refers, and established that the density of the useful entomofauna was unusually high there, which in combination with high-level agricultural techniques enabled the kolkhoz to obtain good output of alfalfa seeds. Demonstrating his correctness, I. Sulimovskiy refers to the fact that in a season apples are treated with chemicals 10 to 13 times. This is also the lot of many other crops. However, this is not a demonstration of the effectiveness of this method, but another example of the glaring incompetence in the application of toxic chemicals. Why can the American farmer walk with a net along the diagonal line of a field, trap pests and according to their number and specific composition decide whether the field should be sprayed or not, while our agronomist-entomologist with higher education believes that it is better to go too far than vice versa? Because we do not have the simplest methods of determining the number of pests.

There are also serious difficulties in the establishment of the material and technical base of alfalfa seed growing. Sugar beet, grain and vegetable seeders are adapted for sowing it by the wide row method at small seeding rates. All this requires not only additional expenditures of manual labor, but time as well, and does not ensure a high precision of sowing and of the appropriate quality of work. Farms expect from machine builders universal seeders for the sowing of perennial grass, including alfalfa. Their areas in the RSFSR alone comprise about 2 million hectares. And throughout the country?

The establishment of the technical base for the treatment of alfalfa seeds is also hampered, because the entire RSFSR annually obtains only 15 KOS-0.5 seed cleaning lines. But twice as many are needed. Of course, they are needed not only for the treatment of alfalfa seeds. The fodder balance on farms in the nonchernozem area, Siberia and the Far East depends on the provision of a number of perennial grasses with seeds, especially as during the last decades some of our meadows and pastures have fallen out of the economic turnover and require restoration.

In the last 2 years the Russian Federation has provided itself with seeds of perennial grass, although a great deal must still be done in terms of species and varieties. A total of 105 plants for the treatment and storage of grass seeds have been built, mainly in its European part, but life demands their construction both in Siberia and in the Far East. How to divide 15 lines if 20 plants are put into operation annually? All our appeals to the appropriate organizations with a request to increase the delivery of lines proved to be futile. It is high time to solve this problem.

The reproduction of leaf cutting bees will be accelerated. However, we are concerned with the development of measures for the protection of these insects against pests and diseases. A year passed after the directive of the USSR Ministry of Agriculture to the All-Union Scientific Research Institute of Experimental Veterinary Science to organize a laboratory for this problem. It has not been established.

All those who are called upon together with rural workers to participate in the implementation of the food program and of the decisions of the May and November (1982) Plenums of the CPSU Central Committee must revise in many respects their attitude toward agriculture and toward its affairs and needs. RSFSR farmers, transferring alfalfa seed growing to an industrial basis, hope that the combination of the efforts of all partners in the agroindustrial complex will make it possible to successfully solve problems connected with a fundamental improvement in alfalfa seed growing during this five-year plan, which will make it possible to greatly increase the production of highly valuable protein fodder.

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## LIVESTOCK FEED PROCUREMENT

### MEASURES FOR IMPROVING PRODUCTIVITY OF NATURAL HAYING, PASTURE LANDS

Moscow KORMOPROIZVODSTVO in Russian No 4, Apr 83 pp 1-2

/Article: "An Important Concern -- To Make the Haying and Pasture Lands an Abundant Source for Coarse and Succulent Feed"/

/Text/ The successful solving of the task concerned with steadily raising the production of meat, milk, eggs and other animal husbandry products is mainly dependent upon intensification of the feed base and ensuring that the livestock and poultry are supplied with full value feed. In recent years the production volumes for coarse and succulent feeds on the farms have increased and improvements have been realized in their quality. This has been promoted by implementation of the decrees adopted by the CPSU Central Committee and the USSR Council of Ministers concerning the all-round development and strengthening of the logistical base for feed production at kolkhozes and sovkhozes throughout the country, the development and implementation on the farms of all-round programs for developing feed production up to 1985 and a system for agricultural management in oblasts, krays and republics. The decisions handed down during the May (1982) Plenum of the CPSU Central Committee and the USSR food program for the period up to 1990 outlined further measures for the intensification of feed production.

The USSR food program has called for feed production in the country to be raised to 500 million tons in 1985 and to 540-550 million tons of feed units in 1990 and for hay procurements to reach 110-112 million tons in 1990. The task has been assigned for implementing the measures required for further intensifying field and meadow-pasture feed production and raising the productivity of all feed lands, such that each farm is fully able to meet the animal husbandry requirements for high quality coarse, succulent and pasture feeds. A great amount of attention has been given to the effective use of natural feed lands -- an important element of feed production in many regions of the country. Over a 10 year period, it will be necessary to carry out radical improvements in these lands on an area of 27-29 million hectares, create irrigated haying and pasture lands on 2-2.2 million hectares and water 36-38 million hectares of pasture land. The volume of work planned for improving the natural haying and pasture lands constitutes a component part of the long-term program for radically rebuilding the natural feed lands, realized in our country following the May (1966) Plenum of the CPSU Central Committee.

As a result of the consistent and planned implementation of a complex of measures for improving the land reclamation status of feed lands following the May (1966) Plenum of the CPSU Central Committee, radical improvements were carried out on farms throughout the country on an area in excess of 19 million hectares, approximately 78 million hectares of desert and semi-desert pastures were watered and more than 1 million hectares of irrigated haying and pasture land created. All of this and also improvements in organizing the use of meadow and pasture lands made it possible for kolkhozes and sovkhozes in many regions of the country to increase their production of coarse and succulent feeds. The average annual harvest of hay from improved haying lands during the years of the Tenth Five-Year Plan increased by almost threefold compared to the level for the Eighth Five-Year Plan.

During the Tenth Five-Year Plan, root improvements to meadows were carried out in Chelyabinsk Oblast on an area of 113,000 hectares and surface improvements -- on an area of 200,000 hectares. On farms in Uvel'skiy, Kizel'skiy and Kunashakskiy Rayons, the hay yield from improved meadows is 19-21 quintals per hectare. This is two times higher than the average for the oblast.

In many oblasts of the Ukraine, highly productive cultivated pastures have become a reliable source for supplying the livestock with feed during the spring and summer period. In all zones of the republic, many farms are obtaining from them 6,000-8,000 and individual farms 8,000-10,000 feed units per hectare. In 1981 the productivity of a hectare of irrigated pasture in the Trans-Carpathian Oblast amounted to an average of 6,100 feed units, Chernovitsy Oblast -- 5,700 and Kiev Oblast -- 4,700 feed units.

A hectare of improved haying and pasture land on farms in Molodechnenskiy, Korelichskiy, Kirovskiy, Ivanovskiy and many other rayons in Belorussia furnishes 3,000-3,500 feed units.

In the desert and semi-desert zones of the country, with use being made of all of the water sources uncovered, only approximately 10 percent of the land is under irrigation. This advances the task of improving the pastures in the desert by carrying out undersowings in natural grass stands of plants which are valuable from a feed standpoint. Extensive work is being carried out in connection with strip plowing and the sowing of improvement-plants on a number of farms in Uzbekistan and Turkmenia. This made it possible to raise productivity roughly by 3 million hectares of pasture land. A system was developed for creating fenced cultivated pastures in the desert zone.

The feed balance for animal husbandry in Kazakhstan consists of 65-70 percent feed, obtained from natural haying and pasture lands. The republic's kolkhozes and sovkhozes are devoting a great amount of attention in this regard to the efficient use of these lands and to raising productivity (especially flood-plain meadows). During the years of the Tenth Five-Year Plan, improvements were carried out on 2.3 million hectares of natural feed lands on farms in the Kazakh SSR, 23 million hectares of desert pasture land were watered and the modernization of watering installations for 27 million hectares was carried out. On many farms in North Kazakhstan, Kustanay, Tselinograd and other oblasts, the grass yields obtained from improved lands were higher by a factor of 3-5 than those obtained from unimproved lands. In

1981, at the Aleksandrovskiy Sovkhoz in Tselinograd Oblast, 12 quintals of hay per hectare were obtained from 5,500 hectares of cultivated non-irrigated haying lands.

Work is being carried out in connection with increasing the production of feed on flood-plain meadows. According to data supplied by the All-Union Scientific Research Institute of Feed imeni V.R. Vil'yams, these lands occupy approximately 30 million hectares in our country, or 8 percent of the area of natural haying and pasture land. The experience of leading farms in Moscow, Vladimir, Gorkiy, Kaluga, Chernigov, Novosibirsk and Tomsk Oblasts and in a number of other regions throughout the country reveals that it is possible to obtain high and stable yields of feed from flood-plain meadows.

In the Belorussian SSR, flood-plain haying lands occupy approximately 400,000 hectares. A complex of measures has been developed and is being implemented aimed at raising their productivity. It includes measures for regulating a water regime, forming an intensive type of grass stand and for applying fertilizers. This is making it possible to raise the productivity of flood-plain meadows by a factor of 4-5.

The management of a cultivated meadow and pasture economy is unthinkable in the absence of intensive technological measures being developed and introduced not only for the creation but also for maintaining stable productivity for the haying and pasture lands. One reserve for raising the productivity of cultivated haying lands is that of introducing a technology for multiple cuttings of grass stands, one which is based upon fertilizer applications according to scientifically sound norms, and harvesting the grasses during the early phases of their development. According to data supplied by the All-Union Scientific Research Institute of Feed imeni V.R. Vil'yams, the use of this technology in regions of adequate moisture is making it possible to carry out three to four cuttings of the grasses and to obtain 8,000-12,000 feed units per hectare.

In raising the productivity of the natural haying and pasture lands and increasing the production of coarse, succulent and pasture feeds, an exceptionally important role is played by mineral fertilizers; they constitute a decisive factor in the intensification of meadow culture. However, it bears mentioning that the volumes for applying fertilizers to meadows are still not in keeping with the requirements of the meadow and pasture economy and, as a result, by no means is full use being made of the potential afforded by these lands. The effectiveness of use of natural haying and pasture lands is still being lowered by virtue of the fact that considerable areas of such land are cluttered with bushes, swampy, water-logged, subject to water and wind erosion or located on solonetz or saline lands. It should also be noted that some kolkhoz and sovkhoz leaders and specialists are underestimating the role played by natural haying and pasture lands as effective sources for increasing the production of feed. As a result, the proportion of pasture feed in the ration structure for livestock on such farms was lowered and an increase took place in the consumption of concentrates, a development which can never be considered as satisfactory.

In the interest of sharply increasing the production of coarse, succulent and pasture feeds and ensuring fulfillment of the appropriate tasks called for in

the country's food program, the USSR Council of Ministers adopted the decree entitled "Measures for Raising the Productivity of Natural Haying and Pasture Lands." At the present time, the agricultural organs, aquicultural organizations, kolkhozes and sovkhozes have been assigned the task of raising the productivity of the natural haying and pasture lands considerably during the next few years and, on this basis, achieving considerable growth in the production of coarse, succulent and green feeds in order to satisfy fully the requirements for these feeds by public animal husbandry and by citizens who are maintaining livestock on private plots and also for creating carry-over insurance supplies of feed. This requires more intense work in connection with radically improving the natural feed lands, with special attention being given to the creation of drained and irrigated haying and pasture lands, to catchwork irrigation for them, to watering the pastures in the desert, semi-desert and mountainous regions of the country and also to modernizing the aquicultural installations on pastures watered earlier. Considerable volumes of work must be carried out in connection with surface improvements to the natural haying and pasture lands and the regrassing of lands which were improved earlier. A great amount of attention is being given to carrying out a complex of operations associated with the fencing in of pastures and the creation of pasture-protective forest strips.

Measures must be carried out aimed at implementing measures for accelerating the creation and introduction into agricultural production of new varieties of meadow and pasture grasses of an intensive type and organizing the production on an industrial basis of high quality seed for these crops, in volumes which will satisfy the kolkhoz and sovkhoz requirements for them.

In the interest of developing the natural feed lands in a more efficient manner, a geobotanical inspection of them should be conducted during the next few years in the principal agricultural regions and the development of plans for the all-round development and utilization of desert, semi-desert and mountainous haying and pasture lands should also be completed. A complex of organizational and agrotechnical measures for raising the productivity of flood-plain meadows must be carried out at higher rates at the kolkhozes and sovkhozes.

In the agricultural development of pastures in the country's arid zone, great economic results must be achieved through the implementation of measures directed towards the extensive introduction of wind-power and wind-mechanical units for mechanizing the raising of water in connection with organizing irrigated tracts for the cultivation of forage crops.

In order to carry out the work of radically improving the natural haying and pasture lands in the volumes called for in the USSR food program, it will be necessary to strengthen considerably the logistical base of the aquicultural organizations and the kolkhozes and sovkhozes. Those ministries and departments which produce the machines for mechanizing the work of improving the natural feed lands must devote greater attention to the needs of agriculture and increase the deliveries to the kolkhozes, sovkhozes and aquicultural organizations of the land reclamation equipment and machines required for mechanizing operations in meadow and pasture feed production.

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## LIVESTOCK

### WINTER REVIEW OF RSFSR MEAT, DAIRY PRODUCTION

Moscow SOVETSKAYA ROSSIYA in Russian 8, 12 Apr 83

[Review prepared by specialists of the RSFSR Ministry of Agriculture in the column "Agricultural Review": "Farms Complete Wintering"]

[8 Apr 83 p 1]

[Text] It is a busy time in the village now not only for the tillers. The period in which the livestock are maintained indoors on the farms is ending. The final weeks of this period, as is known, are the most difficult. The reserves of feed in some kolkhozes and sovkhozes are running low, while the number of animals continues to grow--massive calving of the cows is in progress.

A good deal of skill and craft is demanded from the livestockmen so that no decline in herd productivity is permitted during these days, so that the young animals are kept safe. It is pleasing to note that livestock wintering was more organized this year. The sale of meat increased in the republic by 145,000 tons, i.e. by 5 percent of the level reached last year. Milk production increased during this time by 1.1 million tons or by 13 percent. The average milk yield per cow comprised 639 kg, which is 74 kg higher than last year's level.

The leading livestockmen are in Murmansk, Leningrad, Moscow, Sverdlovsk and Sakhalin oblasts and the Karelian ASSR.

Since the start of the current year they have obtained an average of 550-780 kg milk per cow, or 15-20 percent more than last year.

The work of the right-flanks of the socialist competition is an example of skillful agriculture, the use of all available reserves for increasing livestock productivity and the persistent fulfillment of the Food Program. The average daily milk yield on the dairy-produce farms of Razdol'ye Sovkhoz in Leningrad Oblast now averages 16 kg per cow, which is 800 g higher than last year.

Unfortunately, requisite attention to the correct feeding and maintenance of animals is by no means given on all farms. As a result, some kolkhozes and sovkhozes have actually reduced production and state milk deliveries in comparison to last year. The situation is especially unfavorable at farms in Volgograd, Orenburg and Amur oblasts and Karbardino-Balkar ASSR.

The average daily milk yield here on farms does not exceed 6 kg milk per cow. Livestockmen in Bryansk, Voronezh, Astrakhan, Saratov and Irkutsk oblasts, Krasnoyarsk Kray and Komi ASSR were unable to meet the first-quarter plan for the sale of milk to the state.

But these farms began wintering with a feed reserve exceeding the volumes of past years. Thus, for example, there was one third more prepared coarse and succulent feed in Voronezh Oblast. But they were unable to distribute the feed to the farms. Evidently, the local agricultural organs have not reorganized their work in accordance with today's demands, have not mobilized the farm collectives for the fulfillment and overfulfillment of the established plans.

The indoor maintenance of livestock on Russia's farms is nearing the end. Ahead is a new, no less important stage in the struggle for increasing the productivity of animal husbandry. The republic's livestockmen receive half the annual milk yield during the pasture period. Therefore, it is now necessary for each farm to determine the milch herd's requirement of green feed and the sources for its procurement.

In a number of oblasts deficiencies are allowed in the provision of farms with electric energy, in their technical equipping, in the organization of milk and livestock transportation and the supply of milking apparatus. The lack of refrigerator equipment has a negative effect on the quality of milk production. During the past year, for example, 11 percent milk with heightened acidity reached the processing enterprises from farms. As a result, more than 1.5 million tons of milk was considered substandard. And even at the present time the republic's kolkhozes and sovkhozes are only two-thirds equipped with refrigerator apparatus and one half equipped with refrigerator tanks. Milking pumps and other farm equipment are in short supply.

The workers of the animal-raising farms are confronted with the task of increasing during the grazing period the average milk yields per cow by a minimum of 100-150 kg and of obtaining an average daily weight gain in young animals of 600-700 g during rearing and of no less than 1 kg during fattening. The delivery weight of large horned cattle must be increased to 400-450 kg; that of pigs, to no less than 100 kg.

[12 Apr 83 p 2]

[SOVETSKAYA ROSSIYA in the 12 Apr 83 issue p 2 provides the following supplementary and corrected information to the above article: "In the agricultural review titles "Farms Complete Wintering" published in SOVETSKAYA ROSSIYA of 8 April 1983, the workers of the RSFSR Ministry of Agriculture permitted an error. Baryansk, Voronezh, Orenburg and Saratov oblasts and Kabardino-Balkar ASSR fulfilled the quarter plan for state milk purchases and sold a larger quantity of milk by comparison with the same period last year."] [Editor's Note]

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## LIVESTOCK

### MILK PURCHASES FROM UKRAINIAN PRIVATE PLOTS

PM271042 Moscow IZVESTIYA in Russian 18 Apr 83 p 2

[Report by special correspondent V. Vukovich: "Milk From a Subsidiary Plot"]

[Text] Ukrainian SSR--It happened on a kolkhoz which merged with a neighbor some years ago, so there is no point in naming it. The board invited the milkmaids and calf unit workers to a consultation on whether to appoint an animal expert from their village to head the dairy unit. What sort of question is that? A specialist with higher education.... The women began to have their doubts: if our fellow villager, returning from the institute, deviated from the village rules and did not keep even a solitary piglet in the yard, we could not be sure that he would cope with the public animals.

There is an explanation for this strong objection. In the postwar years many people in western Ukrainian villages kept cows. And despite the fact that at the time the prejudice was still current that a calf in a man's yard would distract him from hard work on the kolkhoz, necessity prevailed. Families wanted homemade dairy products (they did not want the trouble of having to keep going to the city for them) and, of course, organic fertilizer for the garden. Gradually it became accepted that a man was not a farmer unless he had a small subsidiary plot.

Let us have a look at some statistics. Today, in most oblasts in the western Ukraine, there are 51-60 plots per 100 rural households. Compared with other places this is a very good indicator. And the total dairy herd is pretty big. Some 220,000 cows are privately owned in Lvov Oblast, 126,000 in Volyn Oblast and 124,000 in Rovno Oblast. A total of 770,000. What does this figure show?

First of all that there is a substantial extension to the already very large commercial kolkhoz-sovkhoz milk supply. To leave it out of the reckoning is to neglect a substantial reserve for replenishing food stocks. Judge for yourself: if a product surplus of only 1 kg per cow were bought from the owners of 770,000 cows, stores would receive more than 20 tons of butter.

The important question is: who is supposed to buy up small units' surpluses? Attempts to ascertain who instructed rural soviet ispolkoms to purchase milk from the population, when and on the basis of what document bore no fruit. More often than not you hear: it just happens somehow. Are they really unaware

that the rural ispolkom has no regular procurement staff, no specialized transport, no pastureland and no fodder stocks? For that reason the kolkhozes have to bear the burden of purchasing. The milk from private dairycows has not been noted in kolkhoz records. But it has very definitely entailed irrecoverable expenditure, especially transport costs.

It is a good thing that livestock raising on personal plots has at last been recognized as an integral part of agricultural production as a whole. The union government has authorized kolkhozes and sovkhozes to enter into contracts with small livestock units to fatten meat livestock and buy milk surpluses on the basis of mutual interest.

In what way is the new type of cooperation economically expedient? I talked about this with Lvov Ukrainian CP Obkom Secretary M. Vasyliv.

"Four or five years ago several of our kolkhozes," he said, "took the step of concluding contracts with the owners of subsidiary plots for the fattening of cattle with fodder on account. It proved profitable. So the contract milk-purchasing system became rapidly established here. In 1982 villagers supplied 59,100 tons, or 13.6 percent of all milk purchases. Last year showed that you can get even more from small units. The villagers sold 72,400 tons from their dairy animals. I must point out that the average milk purchase per cow for the oblast's private sector was 336 kg, while in such rayons as Radekhovskiy, Brodovskiy and Nesterovskiy it was 593-770 kg."

"How do you explain the fact that people with their own cows have readily entered into this special kind of cooperation with kolkhozes?"

"The kolkhoz is a big procurer. As stipulated in the contract, it provides hay and straw and sees that pastures are improved and veterinary services are available."

"In what way do the kolkhozes benefit from the cooperation?"

"The milk purchased from the population goes into the kolkhoz sales plan, and an additional payment is made if the average annual milk sales level in the previous 5-year plan is exceeded. Last year farms received extra payments totaling R2.6 million, which covered the cost of receiving and transporting the milk."

The results in Ternopol and Ivano-Frankovsk oblasts show how progressive the system of milk purchases through kolkhozes is. The increase last year compared with 1981 was 15,200 tons in the former and 9,000 tons in the latter. There is another gain. The cooperation prevents any reduction in the number of cows in private use which, in turn, stabilizes and production of young animals needed for fattening.

The new management organs--oblast and rayon agroindustrial associations--no longer keep aloof from small livestock units. They have specialists part of whose job is to elaborate questions relating to intensifying production on private holdings, providing services for them and monitoring the purchase of surplus products.

At first it appeared that giving kolkhozes the job of procuring milk would diminish rural soviets' contact with everyday activities. The fears were unnecessary. Their permanent agriculture commissions took over monitoring the fulfillment of contract obligations and now organize competition among the suppliers of surplus products. There have also been initiatives. Rural assemblies were held in Nesterovskiy Rayon, Lvov Oblast, and they elected councils to assist personal subsidiary plots. Villages in Uzhgorodskiy Rayon, Transcarpathian Oblast, have formed public commissions, drawn from the aktiv membership, to supervise the use of subsidiary plots.

It has to be said, however, that the cooperation system has not become firmly established everywhere. The Volyn Oblast statistical administration supplied me with the following information: "Purchasing of surplus milk through kolkhozes is taking place in two rayons—Ivanichevskiy and Vladimir-Volynskiy. In the other 13 this is the job of rural soviet ispolkoms." Naturally, one wanted to know; who benefits?

First a meeting in Ivanichi. V. Blazhencuk, first secretary of the party raykom, and M. Loyanich, chairman of the rayispolkom, are staunch advocates of cooperation.

"After all, what was it like when kolkhozes would have nothing to do with milk purchases?" the chairman asked. And he answered his own question: "In 3 years we recorded 1,721 tons of milk from privately owned cows and considered it an achievement; last year we obtained far more—2,437 tons. An average of 428 kg per cow.

On to the neighboring rayon—Gorokhovskiy. It is bigger in every respect. There are twice as many privately kept cows as in Ivanichi. My interlocutor, raykom First Secretary I. Sementsov, is well aware of this.

"We have deviated from the contract system and lost ground," he said. "In fact, whereas surplus purchases showed an increase of 688 tons in 1981, the increase last year was only 21 tons. Yes, paltry!"

Analysis of the statistics for the last 3 years in the other 13 rayons shows that in some of them the curve representing milk purchases from personal subsidiary plots has fallen below the 1980 mark.

Of course, a switch from old to new always means breaking a habit which seems right. But my old friend Petr Olishchuk, the oldest kolkhoz chief in Lvov Oblast, believes that patience is essential when switching from the old to the new. He explains: "Don't be in a hurry, let the new way mature and reveal itself!" I was reminded of this when I talked with A. Yershov, chairman of Rovno Oblispolkom.

"Last year," he began, "97 percent of the milk surpluses from the population--and they totaled 22,500 tons--came through kolkhozes, which received extra payments totaling R683,000. This was 6,700 tons more than the year before last."

What did I hear next, you were wondering? Apparently, this year cooperation will not be widely practiced, except maybe on big farms, and only if they ask.

"We believe," Ahershov continued, "that this system enables kolkhozes to obtain more milk from subsidiary plots, but they do not pay proper attention to the production of their own milk."

What's the answer to that? In the first place, as has been said before, the government authorized the inclusion of products purchased from villagers in overall kolkhoz output and even instituted a material incentive for exceeding the level previously reached. Second, no one ever prohibited local soviet ispolkoms from checking and monitoring the productivity of kolkhoz livestock units. And if it is discovered that production at them is falling, then the culprits will be taken to task.

"If there is no cooperation contract, who is going to supply the small units with straw, hay and root crops?" I asked.

"They will come out of kolkhoz stocks...."

That puts us back in the situation which cooperation eradicated. Once again we have ties which are not binding and a clash of interests.

But, no matter which thorns one encounters on the path of "kolkhoz-personal subsidiary plot" cooperation, it is basically progressive. It involves rural worker and his plot in active work implementing the Food Program. This is a guarantee of better utilization of the considerable potential of the small dairy farms of the western Ukrainian oblasts.

CSO: 1824/342

AGRO-ECONOMICS AND ORGANIZATION

EFFORTS TO INCREASE EFFICIENCY OF RSFSR AGRICULTURAL ENTERPRISES

Moscow SEL'SKOYE KHOZYAYSTVO in Russian No 10, Oct 82 pp 2-5

[Article by G. Kulik, chief of the economic planning administration of the RSFSR Ministry of Agriculture: "Using Economic Tools"]

[Text] The May 1982 Plenum of the CPSU Central Committee worked out a series of measures designed to ensure the successful fulfillment of the USSR Food Program. Particular attention was given to perfecting the economic mechanisms, strengthening the economy of kolkhozes and sovkhozes, and motivating the farms, kolkhoz and sovkhоз workers to increase production of grain, meat and milk. This much is obvious. The experience gained in the RSFSR after the March 1965 Plenum of the CPSU Central Committee has proved the following: in addition to strengthening the material and technical base, it is economic controls and correctly established interrelations within the agro-industrial sector that play a most critical role in ensuring high levels of development in agriculture.

At that March Plenum, as is well known, farm initiative was to be increased; performance was to be gauged by the level of profit. To achieve this, planning procedures were reviewed, farm prices were raised, and financing of kolkhozes and sovkhozes was changed. Already in the first five years after 1965, gross farm output in all categories increased by R8.3 billion in the republic, or more than 20 percent. Sovkhoz production, once unprofitable, is now turning a profit, and profit rates for state farms in the RSFSR are 16.4 percent, 33 percent for kolkhozes. In 1970 the total of profit and net income surpassed R5.3 billion. And the number of unprofitable farms decreased.

But by the beginning of the 1970's, the situation in the farm economy began to deteriorate for a number of reasons. Profit levels for the production of a number of agricultural commodities began to decline, several of them becoming negative.

In spite of increased gross output, crop yields and labor output, the total of net income and profit has been declining in recent years. During the 7th Five-Year Plan farms had net income and profit of R3.9 per R100 of gross output. Between 1966-70 the figure was R11.5. The average during the 10th Five-Year Plan was R1.2. Profits have now been replaced by losses.

The decreased profit levels and the greater number of unprofitable farms can be chiefly explained by the fact that farm expenditures in recent years have increased much more than has farm output. Of the increased expenditures, those that are not part of farming activity--increased costs of manufactured goods, materials, services and construction--make up more than 68 percent.

Not having their own funds, many kolkhozes and sovkhozes were forced to carry out production with the help of bank credit. This complicated their financial position.

In order to improve and revitalize the economic situation in rural areas, the CPSU Central Committee and the USSR Council of Ministers enacted a series of far-reaching measures. Beginning January 1, 1983, procurement prices for the following farm products will be increased: cattle, pigs, sheep, milk, grain, sugar beets, potatoes, vegetables and several other products.

But an improved farm economy and increased profit level will not be achieved merely by increasing state procurement prices. Well-run farms will benefit most from this, while it is the average and below average farms that need help. Therefore, in addition to the price increases there will also be price supplements for commodities grown under poorer conditions on farms that show little or no profit. This is done to create normal farming conditions for those farms that are not so economically viable.

According to the predictions of specialists, the increased state prices together with the price supplements will permit most kolkhozes and sovkhozes to show a profit in the production of all basic commodities: grain, potatoes, vegetables, sugar beets, fruit, crops for processing, milk, beef and veal, pork, lamb and wool. Profits for kolkhozes and sovkhozes based on 1981-82 expenditures will be 20-21 percent.

Kolkhozes and sovkhozes, other state agricultural and inter-farm enterprises which have not shown at least a 10 percent profit for the last two-three years will be considered low-profit or unprofitable. They will thus be eligible for the supplemental prices. "Low profit" may in certain circumstances also include farms that have a higher profit level but which cannot by their own means either repay long-term loans extended by Gosbank or finance capital investments and other planning measures.

The list of low-profit and unprofitable farms for which the price supplements have been set up will be compiled on location and examined by rayon soviets of the agro-industrial association, this to more fully ascertain the circumstances and possibilities for each farm. The Council of Ministers of autonomous republics, krayispolkoms and oblispolkoms will certify the lists. It has been proposed that these organizations then set up a fund for the supplemental prices.

Because the production situation and the economic position are not the same on all farms, the size of the supplemental prices within the limits of the general fund for the oblast must be differentiated by the profit level in farm groups. Therefore the grouping of farms and the establishment of price supplements

must ensure equal economic conditions and profitable work for farms during plan fulfillment and during the sale of produce to the state.

Soviets of the agro-industrial association will determine the number of farm groups eligible for supplemental prices in oblasts, krays and autonomous republics. It has also been proposed that these prices remain fixed until the end of the five-year plan. This will give farms an added incentive to increase production.

Under these new conditions the economic sector will become much more important. In particular both economists and specialists from financial and banking organizations must determine on the basis of an all-encompassing analysis of each farm the groupings of farms eligible for price supplements. They will consider the conditions under which the farms operate and their profit level. And each such group of farms, while fulfilling plan indices, must have such price supplements so that profit levels are approximately equal. This means that on site land evaluation must be carried out to a greater degree. This information can then be used to objectively identify the best and the worst farming conditions.

To improve the financial position of kolkhozes and sovkhozes so that by the first year the effect of the price supplements can be felt, earlier bank loans will be written off and payment periods for the remaining debts will be extended.

In recent years the purchase prices for state procured produce have been the same for kolkhozes and sovkhozes. Sovkhozes during this time have received budgetary allotments in order to finance the construction of homes, trade and service establishments, to maintain preschool institutions. Kolkhozes have not received such allotments. The Plenum of the CPSU Central Committee then granted funds to kolkhozes for the construction of homes, trade and service establishments, and roads in order to reduce this inequality. An annual sum of R3.3 billion has been allotted for these needs, and it will in particular pay for insurance outlays and maintain kindergartens, nurseries, pioneer camps and librarys on poorer farms.

Both party and government have enacted other measures designed to increase the motivation of farm workers on kolkhozes and sovkhozes to increase yields and total output. Beginning January 1, 1983 salary supplements will be given to animal handlers and to farm specialists. The duration of paid vacations will be increased and motivation will be provided to ensure increased profits and liquidation of unprofitable farm work. All this will encourage initiative on the part of farm workers.

Actual fulfillment of the measures proposed at the Plenum of the CPSU Central Committee to strengthen the finance sector demands a basic improvement in economic work at all levels--the farm, rayon, oblast and republic. And these measures will have effect only if enterprises, kolkhozes and sovkhozes make a daily effort to conserve and economize on the use of material and technical resources, fuel, feed, spare parts, building and other materials, electricity. In this regard it is so important to have on each farm an effective self-

management, self-finance system. The present economic conditions will allow this.

Agricultural enterprises of Stavropol Kray, in particular those of Predgorniy rayon, have introduced such self-management systems. All kolkhoz and sovkhoz subunits receive at the beginning of the year plan production goals and limits on resources, materials and raw materials. Control over fulfillment of farm goals rests not only at the individual farm level but also at the rayon level. Special bulletins are issued which calculate quarterly and monthly totals for work of the farm subunits. And this produced immediate results: most farms showed a profit in 1981.

There is one day set aside in the kray when directors and specialists from kolkhozes and sovkhozes meet and analyze the production and finance figures of enterprises and individual sectors, point out shortcomings and indicate ways to overcome them. Particular attention is given to economic evaluations of personnel, especially of mid-level personnel, brigade and section leaders.

Farms of Pravdinskiy rayon in Kaliningrad Oblast have also introduced self-management systems. All 90 kolkhoz and sovkhoz subunits now operate on the intra-farm, self-management system. Subunits operating under such a system have a great deal of latitude in questions of work organization and the use of machinery, materials and labor. Plan goals are discussed at production meetings and are confirmed in the first the days of January. The entire production of processing potatoes on kolkhozes in the rayon is the responsibility of self-managed, mechanized teams who then receive pay for the final product. So as a result the production and sale of potatoes has increased since the 9th Five-Year Plan one and one-half times; profit is now 40 percent. For each ruble earned workers on the mechanized teams have produced an additional 30-50 kopecks.

The Gorkiy kolkhoz in Kaliningrad Oblast has become the model farm on which the best principles of the self-management system have been adopted. All four complex-wide brigades, the nine animal farms, the mechanized sectors and the building sector with its subunits have been operating on the self-management principle. Each year the farm fulfills its state obligations. Up to 800 quintals of milk and up to 100 quintals of meat are produced on each 100 hectares of land. Each hectare of tilled land produces up to 40 quintals of feed. Gross output per worker is R7,200, and the production profit level is 28-32 percent.

Work of the Nazarovskiy sovkhoz of Krasnoyarsk Kray is well known both in Siberia and beyond. This large, multi-unit farm has 31,000 head of cattle and 15,000 hogs. Having but an average supply of capital and energy, this sovkhoz, in contrast to many other farms, is profitable. Year in and year out it reduces production costs and increases labor productivity. During the 10th Five-Year Plan the yearly profit increased by a factor of 1.7 and amounted to R5.8 million. All of its units were profitable. The farm attained the following production costs: R5.7 per quintal of grain, R14 per quintal of milk, R63.7 per quintal of weight gain for cattle, R57 per quintal of weight gain for pigs. The ninth issue of the magazine SEL'SKOYE

KHOZYAYSTVO ROSSIYA for 1982 has a detailed report about the work of the Nazarovskiy sovkhoz.

Yet while we are delighted with the work of the best farms, we cannot forget about shortcomings.. In 1981, 5,202 kolkhozes did not adopt the intra-farm, self-management system, and on many farms it is being introduced from above. Work results from self-managed subunits are not analyzed, while labor payment and material incentives are not connected with the final product. All too often mechanized equipment operators and other workers do not receive material benefits for reducing production costs and economizing on the use of material and technical supplies. All this is marked by unprofitable methods and irrational use of supplies.

Many farms have unjustifiably high production costs. Can they be reduced? For sure they can, and each farm has the potential to do this.

The main methods are well known: improved land use, improved use of basic production resources, increased yields on land and increased farm productivity, decreased labor expenditures. There are still other ways in the economic and in the farm sectors to significantly reduce production cost. We have in mind good farming practices and a careful use of all material and technical resources. Let's look at the facts.

In 1978-80 unprofitable expenditures and losses on kolkhozes and sovkhozes in Ryazan Oblast amounted to R80.6 million; this was 10 percent of total production expenditures. Cattle infertility caused farm losses of R43.5 million, while losses due to murrain and other deaths were R12.5 million. Various interest payments, fines and penalties in the oblast exceeded R7.7 million.

The Kalmyk ASSR has enjoyed favorable weather in recent years. Farms have had huge harvests of grain and other crops and were able to fulfil state quotas for the sale of grain. But in spite of these favorable conditions, unproductive expenditures and losses in the autonomous republic totaled R35.7 million in the past three years (14 percent of total production expenditures). Losses from murrain, diseases and death of animals amounted to R14.1 million.

Farms of the Severo-Kavkazskiy, Ural'skiy and Zapadno-Sibirskiy economic rayons had huge unproductive expenditures. Here input losses per farm amounted to R14-20,000.

In the Tuva ASSR each kolkhoz and sovkhoz showed an average loss of R18,600. This means that specialists are not doing their job, that there is a lack of concern for the general welfare.

Among those unproductive expenditures that relate to the cost of producing farm commodities, sovkhozes last year incurred losses of more than R19 million because of product losses and spoilage, much above normal levels of losses.

These facts point out that there are many ways to reduce production costs and to improve the financial position of farms. And beyond a doubt the intro-

duction of a real system of self-management will deal with poor farming practices.

Among those measures designed to increase agricultural productivity, much attention is being given to better payments for labor on kolkhozes and sovkhozes. In his speech at the May Plenum of the CPSU Central Committee, comrade L.I. Brezhnev stated: "The main issue is that each worker sees and feels the direct, simple and understandable link between that which he does and that for which he is paid." This will be attained by expansion and introduction of brigade and collective contracts, by a system of payment by the job and also by the bonus system.

In 1981 more than 7,400 brigades and sections in the republic entered into this modern form of labor organization and payment. It is widespread on farms in the following oblasts: Rostov, Moscow, Sverdlovsk, Leningrad, Volgograd and Belgorod. More than 25,000 intra-farm subunits and divisions are to begin work on the basis of the collective contract by the end of the five-year plan.

In 1981, an unfavorable year, where brigades and sections were working in Belgorod under collective contract, grain yields were 2.5 quintals higher than average yields for the oblast, sugar beets 22 quintals higher, and sunflowers for grain 3.3 quintals higher.

Unfortunately, brigades and units are often formed in a hurry. The feelings of team leaders and collective members are not always considered, contract obligations are not observed, brigades and teams are not provided with machinery and equipment, fertilizers and herbicides called for in the contract are not provided, and established payment levels and bonuses for finished work are not adhered to. This means that the units break up as work goes along.

Much can be said for introducing output yields based on technical feasibilities. This is an excellent basis for further increases in productivity and cost reduction.

Such modern forms of work organization and machinery use like the creation of harvesting-transport detachments and complexes and the establishment of feed production as an independent sector should be widely imitated. We will also see increased implementation of the following: line and section production of milk, a daily work routine of two cycles, a two-shift work schedule, and other modern forms of labor organization and payment.

We will now turn to the issue of better use of fixed capital and increased returns per ruble invested in agriculture. Fixed capital on kolkhozes and sovkhozes in the RSFSR increased in the period 1965-80 by a factor of 4.3, yet production increased somewhat less. This led to a growth in amortized funds, operating funds and costs of production. Amortized funds now amount to 12 percent of production expenditures, and expenses for maintenance of fixed capital levels on kolkhozes and sovkhozes exceed R2.5 billion a year. We don't have to elaborate just how important it is to secure high returns to invested capital.

Directors and specialists from many kolkhozes and sovkhozes, because they depend on large amounts of state help, rationally and carefully use production possibilities. They begin new construction only when all opportunities for increasing production by modernization and repair of existing facilities have been exhausted. Kolkhozes and sovkhozes of the following areas are using their production possibilities to secure large returns to government investments in construction: Moscow, Leningrad, Belgorod, Sverdlovsk and Omsk Oblasts, Khabarovsk and Stavropol Krays. But their example is not being followed everywhere. In many places the amounts of capital and energy in use are increasing, yet total output remains the same. For example, in Orel Oblast more than R2 billion has been invested for agricultural development during this five-year plan. Capital accounts of farms have grown by a factor of 4.3 since 1965. But the huge production potential here and the capital investments have not brought the expected returns. Gross output in the public sector during the 10th Five-Year Plan has increased only 19 percent compared to levels in 1961-65. The value of gross output has decreased from R228 million during the 7th Five-Year Plan to R206 million in the 10th. There has been a slow growth in the production of animal products.

Just about the same situation holds in Yaroslav Oblast which has greater capital resources than many of its neighbors. Commodity production during the 10th Five-Year Plan was less than during the 9th. At the same time the neighboring oblasts--Vologda, Vladimir and Ivanovo--increased commodity output.

One of the main reasons for low levels of capital returns is the disproportional development of the material and technical base. During the past two five-year plans more than 54 percent of the funds invested in production construction have been allocated to the livestock sector. The material and technical base of this sector has improved a great deal. Most farms are now equipped with high quality livestock facilities, yet the material and technical base for feed production has fallen behind. The republic's kolkhozes and sovkhozes had by the end of 1981 only 41 percent of the required number of large-scale facilities for silage and haylage. 7,360 farms do not have repair shops, 17,000 do not have centers for technical service. This prevents both high productivity of machinery and decreased expenditure on machinery use and output.

The tangible, unproductive losses suffered by farms are a result of a shortage of warehouses and storage facilities for mineral fertilizers. Each year many kolkhozes and sovkhozes fail to attain adequate amounts of output because they use poor quality seeds. And this can be explained by the lack of a modern, highly mechanized base for cleaning, drying and storing seed on kolkhozes and sovkhozes.

During the 11th Five-Year Plan capital investments in the plant sector on the republic's farms will increase by R2.9 billion. This 32 percent increase will come as a result of a curtailment of construction of livestock farms and complexes. Capital investments for the social reconstruction of rural areas will increase by R6.2 billion. Construction of non-production related

facilities will receive more than 35 percent of capital investment during the 11th Five-Year Plan as opposed to 27 percent during the 10th.

Work experience of many specialized enterprises shows that, as a rule, their production costs are lower, labor output and production profit levels are higher. The 11th Five-Year Plan will see a continuation of the work whereby specialized and concentrated production is developed and production in rayons and among farms is situated with regard to the natural features of each zone. Here the plan plays a most important role. Such work is being properly carried out in the following areas: Stavropol and Khabarovsk Krays, Lenigrad, Moscow, Omsk, Belgorod, Chelyabinsk and Sverdlovsk Oblasts. Here, while the plan is being fulfilled, measures are being proposed and undertaken for the specialization and concentration of production on the basis of inter-farm cooperation.

Measures taken in accordance with decisions reached at the May Plenum for improving the administration of the agro-industrial associations in rayons, oblasts, krays and autonomous republics offer many possibilities for improving efficiency in agricultural production. Rayon networks are receiving much attention. Authoritative organs are to be set up in rayons for the administration of the agro-industrial sector of the economy. These organs are invested with wide-ranging authority and will be able to act in all sectors of the agro-industrial complex to further the interests of kolkhozes and sovkhozes.

Far-reaching changes are being effected in the relations between kolkhozes and sovkhozes, those organizations that provide them with construction, land improvement and procurement services, and Sel'khoztekhnika together with Sel'khozhimiya. Enterprises and organizations of the above will be joined into the structure of the local agro-industrial associations. This will facilitate coordination of their work and will permit a more effective use of production capabilities and of material and technical resources. The basis for evaluating the work of these organizations and for awarding bonuses to specialists and directors shall be--in addition to the services performed--agricultural production: output yields, fulfillment of state procurement quotas for grain, meat, milk and other products.

In accord with decisions of the CPSU Central Committee and the USSR Council of Ministers, bonuses for workers and specialists are to be based on annual figures for the increase in agricultural output and profit levels on the particular kolkhoz and sovkhоз compared with levels for the previous five years. They will be awarded a bonus to be given over the course of the year and not to exceed one and one-half times the monthly salary during that year. The bonus will be given for fulfillment of contractual obligations and for rational use of material resources. Much of the bonus will be tied in with work results on agricultural enterprises.

The formation of capital funds for economic stimulation and profit promotion on service enterprises and organizations is changing. When all is said and done, this will improve the work of these service enterprises and organizations and, as a result, promote agricultural efficiency.

The decisions of the May 1982 Plenum of the CPSU Central Committee are effectively changing the economic situation in rural areas. The processes of farming will create the conditions necessary for greater labor output, increased production, lower expenditures and improved efficiency.

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## AGRO-ECONOMICS AND ORGANIZATION

### ESTONIAN ECONOMIST COMMENTS ON RAPO FINANCIAL MANAGEMENT

Moscow SEL'SKAYA ZHIZN' in Russian 19 Apr 83 p 2

/Article by L. Lykhmus, chief economist of the Vil'yandiskiy RAPO Council, Estonian SSR: "Funds of an Association"/

/Text/ Our rayon agroindustrial association will soon be 8 years old. Commencing with its very first days, it has operated on a completely cost accounting basis. The necessary centralized funds were created based upon decisions handed down by the RAPO's council for financing the economic activities. In all, approximately 8 million rubles were transferred to these funds over a period of 7 years.

The amounts of the contributions to the funds were not always the same. They were determined mainly by economic need. During the initial years, the association did not engage in large-scale construction. Thus only small sums were added to the fund for development. Nevertheless, more than 600,000 rubles were allocated for sovkhozes having a low profitability. If you further take into account the payments from other centralized funds (social-cultural development and housing construction, the material incentive fund and also the mutual assistance fund), then the overall amount used for overcoming the backwardness of individual farms came to 1.6 million rubles. This was in addition to the assistance provided by other sources to those enterprises carrying out production operations under complicated conditions.

At one time, when the basic economic principles for the activities of agroindustrial associations were just being developed, there were many arguments regarding the methods for forming the centralized funds. There were those who wished to proceed in a simple manner and evaluate the effectiveness of production based upon the total amount of profit obtained and the productivity level. But, as is well known, the kolkhozes and sovkhozes do not carry out their production operations under identical conditions. Their profits are dependent to a considerable degree upon the fertility of the soil, their distance from the supply bases, the availability of fixed capital and upon many other factors. Thus we are still not paying attention to the amount of profit when determining the payment amounts into the centralized funds.

The scientists have aided us in selecting a more accurate principle for evaluating the economic activities of the kolkhozes and sovkhozes. A special

evaluative coefficient was developed for this purpose. It makes it possible to take into account the peculiarities of management at all of the kolkhozes and sovkhozes. Similar to the management conditions, this coefficient undergoes changes from year to year and each year it is approved once again by the council of the agroindustrial association. In 1980, for example, the farms contributed 11.15 rubles per hectare to the centralized funds and in 1982 -- 14.35 rubles.

This was on the average for the rayon. If we examine the effect of the evaluative coefficient from the standpoint of individual farms, then the difference becomes clearly apparent. For example, let us take the Sovkhoz imeni Gagarin. It includes the largest swine raising combine in the republic, with the fattening being carried out on the basis of mixed feed obtained from state resources. The farm also obtains a large quantity of mineral fertilizers and it uses almost all of the organic materials obtained from the swine complex on its fields. A housing fund has been developed here and all of the branches have been supplied with adequate manpower. This is why a very strict evaluative coefficient -- 3.2 -- has been established for the Sovkhoz imeni Gagarin. And accordingly last year the enterprise made a contribution to the RAPO funds of 35.62 rubles per hectare.

The RAPO /rayon agroindustrial association/ also established a high coefficient -- 2.0 -- for the Karksi Kolkhoz. Nor was this an accident. The Karksi Kolkhoz also carries out its production operations under favorable conditions. In addition to highly fertile lands, the kolkhoz has a brewing enterprise and a canning department. There is a poultry farm here and an inter-farm complex for the fattening of large-horned cattle is rapidly developing. Thus last year the kolkhoz made a contribution to the centralized funds of 22.3 rubles for each hectare of cultivated land.

The land of the Kyrgemyae Sovkhoz lies adjacent to the Karksi Kolkhoz. It bears mentioning that "Kyrgemyae" means "high mountains." And for Estonia they are indeed high. But the locality here is truly hilly and it includes many swamps and shrubs. The level of availability of fixed capital and manpower at the Kyrgemyae Sovkhoz is the lowest in the rayon. Thus one can understand why a low coefficient for evaluating production efficiency -- 0.25 -- was established for the Kurgemyae Sovkhoz. The sovkhoz contributes 2.79 rubles per hectare to the RAPO funds -- 13 times less than the Sovkhoz imeni Gagarin.

During the initial years, when as yet the RAPO had not implemented any measures of an all-rayon nature, the principal item of expense from the centralized funds was that for providing assistance to economically weak farms. Later this item of expense was relegated to secondary status. There were two reasons for this: the economies of these kolkhozes and sovkhozes began to grow stronger and considerable grants were no longer required. In addition, an this is an important factor, the proportion of construction at interfarm installations increased considerably. And considerable capital expenditures were required here.

The growth in interfarm construction required an increase in the size of the centralized resources. Whereas 5-6 years ago the association centralized no more than 3 percent of the overall profits of RAPO farms, by last year the figure had risen to 6 percent. This amounted to 1.79 million rubles, a

considerable amount of money. But we require an even greater amount. Indeed, in addition to expanding the interfarm fattening base at the Karksy Kolkhoz, which is proceeding mainly on the basis of the mutual assistance fund (the kolkhoz returns the resources obtained from the fund), the construction of a department for the reproduction of brood stock at the swing combine of the Sovkhoz imeni Gagarin was carried out at a cost of 2.9 million rubles. The construction of a new reproduction department has been started here. All of the rayon's swine raising farms are interested in this facility being placed in operation ahead of schedule: hence they must annually obtain more than 50,000 young pigs for fattening purposes. There will be a reproduction unit for supplying young pigs in the required amounts for the private plots of rural residents.

Certainly, all of these interfarm installations should be placed in operation as rapidly as possible and yet we are being held back by lowered limits for the procurement of construction materials and also by the weak status of the supply organizations of both the rayon and the republic. This is why the association's council does not favor a sharp increase in the centralized funds. Nor are changes planned in the structure for using these funds. The situation is as follows: approximately 65 percent of the centralized resources are used for the development of production, 15 percent for the material incentive fund, 6 percent for the fund for social-cultural measures and housing construction, and 13 percent of the centralized resources for the mutual assistance (or reserve) fund.

Farms of dual subordination -- sovkhozes of scientific-research institutes and the Ministry of the Fruit and Vegetable Industry -- participate only in the formation of a centralized material incentive fund. Actually, they obtain funds for production development and for housing and domestic construction directly from their higher organs. Enterprises which process agricultural raw materials -- meat combine, dairy products combine, grain products combine -- at one time participated in the formation of centralized funds based upon their above-plan profits. Following the creation of agroindustrial associations in all of the republic's rayons, the decision was made to have the processing enterprises participate in the formation of similar funds at the republic level.

I believe that this is fair. Indeed, some rayons lack a processing industry. These RAPO's found themselves to be in an unfavorable position when it came to the formation of centralized funds. Indeed the smoothing out of management conditions must be carried out not only for individual farms but also for entire rayons. This action is served very well by all-republic centralized funds. For their formation, full use can be made of the evaluative coefficients being employed within the rayons at the present time.

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## AGRO-ECONOMICS AND ORGANIZATION

### PLANNING PROBLEMS OF AGROINDUSTRIAL COMPLEX DISCUSSED

Moscow PLANOVYE KHOZYAYSTVO in Russian No 3, Mar 83 pp 61-66

Article by S. Assekritov, chief of a sub-section of USSR Gosplan: "Concerning the Problem of Branch Planning for the Agroindustrial Complex"\*/

Text In the country's food program for the period up to 1990, adopted during the May (1982) Plenum of the CPSU Central Committee, a thorough analysis was furnished on the development of agriculture and those branches of industry included in the structure of the country's agroindustrial complex, since the period of the March (1965) Plenum of the CPSU Central Committee.

Notwithstanding the unfavorable climatic conditions experienced over a period of a number of years, the average annual gross production of agricultural goods increased during the 10th Five-Year Plan by a factor of 1.5 compared to the 7th Five-Year Plan, which preceded the March (1965) Plenum of the CPSU Central Committee. In addition to agriculture, other branches associated with it also developed at rapid rates. Considerable capital investments were carried out in those branches of industry engaged in the processing of agricultural raw materials. Thus, during the period from 1966 to 1980, more than 34 billion rubles worth of capital investments, or 6.7 percent of the entire volume, was employed for industrial purposes.

In the methodological instructions for preparing the state plans for the economic and social development of the USSR, approved by USSR Gosplan in 1980, an independent section was singled out for planning the development of the national economic agroindustrial complex and its structure was determined according to three spheres of material production:

"Sphere I -- totality of branches (sub-branches) of industry which supply agriculture, the light, food and meat and dairy industry and the procurement system with the means of production;

Sphere II -- agricultural production proper; the branches of field crop husbandry and animal husbandry; production-technical, agrochemical, irrigation-land reclamation and veterinary sanitary services for agriculture;

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\* In the form of a discussion.

Sphere III -- totality of branches and production efforts which ensure the procurement, transporting, storage and processing of agricultural raw materials".

The country's food program, which is special purpose and all-round in nature, calls for the solving of tasks for all branches of industry which either fully or partially relate to the mentioned spheres of the APK /agroindustrial complex/ and, in addition, it touches upon those problems concerned with intensifying the role played by science, improving the social-domestic living conditions in the rural areas, the development of foreign economic relationships with socialist countries and so forth.

In the interest of implementing the decree of the CPSU Central Committee and the USSR Council of Ministers entitled "Measures for Improving the Economic Mechanism and Strengthening the Kolkhoz and Sovkhoz Economies," the appropriate organizations and departments have been tasked with preparing recommendations on a system for planning and logistical supply for the agroindustrial complex, which must be based upon the requirement for planning the activities of the agroindustrial complex as an integral whole, with a breakdown by branches belonging to it.

In this regard, it is considered advisable under the existing system for the formation of plans to include those indicators which reflect the final results of the activities of the agroindustrial complex at all levels of its administration.

Some economists are of the opinion that for the planning, financing and administration of the agroindustrial complex it is sufficient merely to provide the territorial organs with the volumes of capital investments and logistical resources for the entire agroindustrial complex, with no breakdown by branches \*\*. It is our opinion that such a simplified approach will not change substantially the status of affairs in agriculture, nor in its associated branches of industry, nor will it promote an acceleration in the solving of the tasks of the food program.

The chief instrument for implementing the economic policies of the party has been and continues to be the formation of a plan. Only through a system of plans which includes a totality of the organizational-economic methods and stimuli will it be possible to achieve changes in the proportions in the national economy and an acceleration in the rates for social-economic progress.

Depending upon the specific conditions and tasks, changes must take place in the nomenclature of the products planned and in the measuring instruments for such output, a system of short-term (monthly and even 10-day) plans should be introduced and indicators should be developed which meet the requirements and tasks for the given stage in economic development. At the same time and in a planned manner, changes must take place in the utilization of the material, financial and labor resources.

\* "Methodological Instructions for Developing the State Plans for the Economic and Social Development of the USSR." Moscow, EKONOMIKA, 1980, pp 331-332.

\*\* See: PLANOVYYE KHOZYAYSTVO, 1982, No 3, p 15.

In the development of plans, an important role is played by the accelerated implementation of measures associated with the processing of the agricultural raw materials. The planning organs at all levels must coordinate more closely the planning indicators for the development of branches in the second and third spheres of material production of the agroindustrial complex and they must ensure that the trend is towards achieving the final operational results of the entire complex.

The experience of recent years, wherein considerable capital investments were employed in agriculture in the absence of proper coordination with the long-range development of allied branches of the national economy, testifies to the lack of balance in the plans. In our opinion, this results from an absence of indicators which reflect precisely these final results.

Under the conditions involving newly created rayon and oblast agroindustrial associations, a need arises for introducing new indicators which reflect the economic efficiency of the work carried out by these subunits.

Many economists have recently proposed the organization of planning based upon so-called product sub-complexes, which include both agricultural production and other branches of the national economy that go to form a technological chain for the movement of the product up until it is finally sold. In our opinion, this proposal is deserving of attention. The sub-complexes can be formed rather efficiently during the next stages in the processing of the products: sugar beets -- granulated sugar, oil-bearing crops -- vegetable oil, grapes -- wine-making products, animal husbandry -- dairy and meat products and so forth. Obviously, the balanced coordination of planning indicators is simplified considerably when planning a sub-complex and, even more importantly, it furnishes a clear orientation for them for achieving the final result, that is, the product required for the consumer. In addition, the use of such an approach makes it possible to coordinate the interests of allied branches belonging to the sub-complex.

In particular, for agriculture and the industrial branches associated with the processing of agricultural raw materials, we are of the opinion that indicators for the quality of the raw materials being made available for industrial processing should be introduced into the state plan for the economic and social development of the USSR. Under the existing planning methods, they are taken into account only in the branch departments of USSR Gosplan when developing the technical-economic justification for the output production plan and they are not task-reference points for the direct producers of the raw materials -- the agricultural organizations. In the process, use is made of a simple statistical method for determining the average value (for example, in the sugar industry the planned sugar content for the beets is determined based upon the average value for the preceding 5 years; in the oil and fat industry the oil content of the seed is based upon the average for 2-3 years; in the meat industry the yield of meat by types of livestock and poultry is computed based upon the actual yields obtained during the 3 years preceding the period being planned and so forth).

In the process, the indicators for years considered to be non-typical in terms of conditions (either minimal or maximum) are eliminated from the computations

for the average value and a correction is made for the possibility of raising the given indicator through the carrying out of breeding work, improving the agricultural practices employed or introducing scientific achievements and other measures into operations.

Such a method for averaging out the accounting values and applying them to the period being planned fully excludes the effect of weather conditions. As a result, the level of quality of the plans for industry engaged in the processing of agricultural raw materials is lowered and subsequently the level of their fulfillment fluctuates sharply. In recent years, the quality characteristics of agricultural raw materials have been deteriorating noticeably for a number of reasons.

In our opinion, a computed value for the production volume for finished (final) product, obtained per unit of land area, can serve as an all-round indicator which synthesizes the operational results of agriculture and industry. In addition to the quality characteristics of the agricultural raw materials, such an indicator also reflects the indicators for reduced product losses during transport, storage and processing, since they determine the value for the yield of finished product per unit of raw material.

For a number of years now, successful experimental work has been carried out in Yampolskiy Rayon in Vinnitsa Oblast involving the participation of beet growers in this rayon and workers attached to the Gornorovskiy Sugar Plant and also to motor transport organizations. The principal task of the experiment -- to achieve a maximum yield of sugar from each hectare of beet field. This positive experience has found wide support among the agricultural collectives and a whole series of branches of the food industry: sugar, meat and fat, wine-making, tobacco, starch-syrup and others.

It bears mentioning that the indicator for yield in finished product per hectare of field has already been employed in planning practice. During the formation of the Second Five-Year Plan for 1933-1937, the tasks were defined for the sugar content of beets, the starch content of potatoes, the oil content of sunflower seed and also the sugar, oil and starch yield per hectare of field area.

We are of the opinion that a return should ideally be made to approving these indicators, reorganizing the system of wages and material incentives for workers attached to agroindustrial associations and to making the procurement price level for raw materials to be used for industrial processing directly dependent upon these levels.

In addition, it would make sense to establish planning tasks for lowering losses in raw materials and finished products at all stages of production.

Under the conditions found in rayon and oblast agroindustrial associations, this indicator must be ranked together with the principal ones for production plans, output sales, profits and so forth.

At the present time, the technical-economic justifications for production plans for industrial output reflect only a portion of the losses and not the principal portion. A summary reflection of these losses in terms of physical

volume or in a cost sense, during the production stage for the agricultural products and prior to the sale of the finished industrial product, is not available in any of the sections of the plan. The reasons for losses must be established and, for the purpose of raising responsibility for the blunders which occur in the work, the losses in terms of quantity must be determined at all levels of management.

During the May (1982) Plenum of the CPSU Central Committee, L.I. Brezhnev pointed out the considerable losses which had occurred both in agriculture and in industry, transport and in the procurement and trade spheres and he emphasized that "an efficient system of measures for combating losses must be thought out and implemented in each rayon, oblast and republic". Such a system can be implemented through the introduction of planning (accounting) indicators and also by establishing increased responsibility by specific individuals for the losses which occur.

The operational indicators of almost all of the branches of the food industry are dependent upon the quality and even moreso upon the quantity of the agricultural raw materials being made available for processing. Here we have in mind not only the indicators for the current but also for the following year, since such types of raw materials as sugar beets, the seed for oil-bearing crops, tobacco, tea leaves and others are processed the following year. Herein lies the principal peculiarity associated with production planning for food products.

The volumes of state procurements of agricultural raw materials, as called for in the plans for past years, are being underfulfilled to a considerable degree in terms of many products. This is bringing about a sharp deterioration in the state of affairs in the food industry and this in turn is causing disruptions in the economic proportions for the entire national economy. Thus, during the 10th Five-Year Plan (1976-1980) and compared to the tasks for the annual plans, the procurements of sugar beets, sunflowers, livestock, poultry and milk were underfulfilled to a considerable degree.

However the industrial enterprises are being staffed with workers in conformity with the production program computed for the planned procurements of agricultural raw materials.

The underfulfillment of the production plans for sugar, oil, milk and so forth, that is associated with insufficient deliveries of raw materials, reduces the volumes of industrial processing of these products in other branches of the food industry, interferes with their assortment and leads to a deficit in food goods.

The situation can be changed only through an accurate determination of the procurement volumes expected from the current year's harvest and the establishment of true amounts for them in the current plans. On the pages of this journal, we have already proposed one possible variant for solving this problem through the introduction of a system of dual-stage corrections to the plans for the current and following years \*\*. However, first of all, this

\* Materials of the May Plenum of the CC CPSU. Moscow, Politizdat, 1982, p 15.

\*\* See: PLANOVYE KHOZYAYSTVO, 1982, No 6, pp 36-41.

system solves the problem only for industry and not for the entire agro-industrial complex; secondly, notwithstanding its introduction, considerable difficulties still remain in connection with balancing the state budget; thirdly, it is only a system for correcting a plan and not a system for the formation of plans.

In this regard, importance is attached to determining the agricultural raw material resources from the current year's harvest for the purpose of ascertaining the volumes to undergo industrial processing during the period planned and also the volumes of state procurements of agricultural raw materials from the harvest for the period being planned. However, difficulties will arise, since in the draft plans for the procurements of agricultural raw materials, in addition to the numerous factors which affect their volume and are associated with the quantities of fertilizer applied, land reclamation, the deliveries of the various types of agricultural equipment and so forth, it will still be necessary to take into account the meteorological situation, that is, the forecasting of the weather.

Scientific studies in the sphere of agriculture testify to the fact that such forecasts can and must be provided. Changes in the weather-climatic conditions which affect the yields obtained from the various crops can be studied, systematized and analyzed and thereafter forecasts provided. The results of scientific studies in this area must be utilized by practical workers attached to the planning organs and by USSR Gosplan specialists.

For solving the first part of the problem, that is, obtaining reliable accounting data on the procurement amounts for the current year and, it follows, for eliminating the disproportions in the economics of the agroindustrial complex, it is obvious that the commencement of the accounting for the period being planned should ideally be changed from 1 January to 1 October of the preceding year. The periods for the preparation, issuing, refinement and approval of the draft plans are thus advanced by three months and this makes it possible, prior to the moment that the draft plan is prepared, to have data available on the actual procurement volume for agricultural raw materials to be used for industrial processing.

In accordance with the proposed system, the preparation of the draft plans will be carried out from December to April, they will be turned over to the USSR Council of Ministers in May or June and the state plan for the economic and social development of the USSR will be approved in July or August. Thus, complete information will be available in January on the agricultural raw material resources to be used during the current year and there no longer will be a need for determining the materials carried over for the year being planned.

This also makes it possible, in January of the current year, to have the material, financial and labor resources to be used in the food industry conform with the raw material resources and thus to avoid losses.

Improvements in the realistic and balanced nature of the plans at the beginning of the year in turn will bring about improvements in the responsibility of both the planning organs and the administrative organizations for ensuring that the plans are carried out.

Our country's first five-year plan (1927/1928 - 1931/1932) was developed according to the "agricultural year" principle.

Even earlier, when the system for planning had just come into being, the question concerning accounting was being discussed extensively by economists throughout the country. "...The natural beginning of the planned economic year should be that moment when the final results of the harvest are at hand, that is, roughly 1 October. The initial point for preparing the economic plan for 1921/22 must be the accounting for the harvest results for 1921," wrote the well known economist S.G. Strumilin. And further: "...We were already familiar with the harvest prior to the preparation of the control figures. This is a very important fact and one which is completely underestimated by those economists who insist on shifting the planned year from October to January." A harvest is a spontaneous factor which least of all lends itself to regulation".

Changing of the periods for the year being planned cannot bring about any complications in the development of the draft plans for all of the remaining branches of the national economy and, in our opinion, can only improve the inter-branch balance coordination of all sections of the plan and raise considerably its realistic nature.

In addition and in the interest of improving the balanced nature of the plans, thought should ideally be given to creating in the draft plans the required reserve funds for raw materials and food goods. Such reserves can be taken into account in the technical-economic justifications for the output production plans of the food branches, together with the agricultural raw material resources to be used for industrial processing; in the plan for goods turnover, in which a computation is carried out on the balances and plans for the distribution of food goods. The creation of reserve funds in the plan for goods turnover and output production will make it possible to compute automatically the appropriate reserves in the plan for the state budget.

The technology for employing reserves for raw material resources and food goods in the draft plan computations does not raise difficulties; a requirement exists for merely solving the problem of the optimum amounts for these reserves. In this regard, the study of this problem should be assigned to NIIPiN /Scientific Research Institute of Planning and Standards/ jointly with the interested branch institutes of the appropriate ministries.

In addition to a change in the planning methodology, the implementation of the country's food program requires the selection of the trends for capital investments. During the 12th Five-Year Plan, 33-35 percent of the overall volume of capital investments in the national economy will be used for development of the agroindustrial complex, including 27-28 percent for agriculture proper. These funds must be utilized completely and in a timely manner. In this regard, the leading construction ministries and also the local party and soviet organs must devote greater attention to the construction projects for the food industry. Only if this condition is met will it be possible to ensure the timely construction and placing in operation of enterprises of the agroindustrial complex and, it follows, to achieve the level of production of food products set forth in the country's food program for the period up to 1990.

\* S.G. Strumilin. "Na planovom fronte" /On the Planning Front/. Moscow Gospolitizdat, 1958, pp 21-22, 197-198.

The results to be realized from implementation of the food program are greatly dependent upon the special purpose nature of the plans and thus a requirement exists for stimulating the work of improving the planning for branches of the agroindustrial complex.

During the November (1982) Plenum of the CPSU Central Committee, Yu.V. Andropov emphasized that a chief concern is that of accelerating the work of improving the entire sphere of economic management -- administration, planning and the economic mechanism\*.

This requirement of the party is well understood by those workers attached to the planning organs, who are called upon to develop further the methodology and methods employed for national economic planning.

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\* See: PRAVDA, 1982, 23 November

## AGRO-ECONOMICS AND ORGANIZATION

### EVALUATING EFFICIENCY OF FIXED CAPITAL UTILIZATION IN MILK PRODUCTION

Moscow EKONOMIKA SEL'SKOGO KHOZYAYSTVA in Russian No 4, Apr 83 pp 39-43

Article by V. Titov and L. Kayre: "Evaluating the Effectiveness of Use of Fixed Capital in Milk Production"

Text In conformity with the decree of the CPSU Central Committee and USSR Council of Ministers entitled "Improvements in Planning and Intensifying the Effect of the Economic Mechanism With Regard To Raising Production Efficiency and the Quality of Work," the ministries, when developing their plans, must ensure the efficient utilization of production capital and this in the final analysis will influence the effectiveness of output production.

An analysis of the use of the fixed productive capital at kolkhozes and sovkhozes in the Latvian SSR in milk production has shown that the value of the fixed capital per cow during the 1976-1980 period was greater by a factor of two than that for the 1966-1970 period and that the capital-labor ratio increased at more rapid rates. This made it possible to lower considerably the labor intensiveness for the production of goods in dairy animal husbandry.

At the same time, during the period under review a deterioration took place in the indicators for the effectiveness of use of fixed capital. Negligible rates of growth in gross output volume compared to the rates of growth for fixed capital led to a reduction in the output-capital ratio and to an increase in the capital-output ratio for goods. Thus, although the value of the fixed productive capital per cow increased by 1 percent, the average annual yield per cow increased by only 0.05 percent. Growth in labor productivity in the branch also lags behind an increase in the capital-labor ratio. For each percent of increase in the capital-labor ratio, there is a 0.43 percent increase in labor productivity (see Table).

Analysis has also revealed that a disproportion exists between growth in labor productivity and in the payments for labor. During the 1976-1980 period and compared to the 1977-1970 period, the payment for 1 man-hour increased by a factor of 1.82 and the volume of products produced per man-hour -- by a factor of only 1.66. As a result, the expenditures for labor payments for the production of 1 quintal of milk increased by 7.7 percent.

One of the chief reasons for the reduction in the output-capital ratio is the accelerated construction of new large-scale farms. The cost for one cattle

billet has turned out to be considerably higher than was the case at installations built earlier. In addition, many of the newly built large-scale farms are still in a stage of development and have not achieved the parameters planned for labor expenditures and livestock productivity.

**Effectiveness of Use of Fixed Capital in Milk Production at Sovkhozes and Kolkhozes in the Latvian SSR**

	Average for:		
	1966-1970	1971-1975	1976-1980
<b>Fixed capital per:</b>			
average annual cow, in rubles	499	720	1031
average annual worker, in thousands of rubles	3.30	5.51	8.63
average annual milk yield per cow, in kg	2844	2845	3007
<b>Labor expenditures for servicing 1 cow annually, in man-hours</b>	<b>265</b>	<b>203</b>	<b>170</b>
Milk production per man-hour, in kg	11.36	15.15	19.23
Production cost per quintal of milk, in rubles including:	15.99	19.38	22.40
labor payments	4.39	4.62	4.73
amortization	0.73	1.01	1.53
Average payment per man-hour, in rubles	0.50	0.70	0.91
Output of average annual worker, in thousands of rubles	3.98	4.65	5.41
Output-capital ratio, in rubles	1.20	0.84	0.63
Products produced (in comparable prices):	411	378	342
per 100 rubles of labor payments and amortization, in rubles			

Based upon the analysis carried out, the conclusion can be drawn that the introduction of new installations into operations and the increase in fixed capital in milk production did not produce the proper national economic effect. However this is not meant to imply that a reduction in the output-capital ratio in dairy animal husbandry is a completely natural development. The farms have considerable reserves at their disposal for achieving a higher output-capital ratio level and other indicators for the use of fixed capital, as borne out by the results of economic analysis of the use of the fixed capital of dairy cattle husbandry on individual farms.

We summarized the data for 224 sovkhozes of the Ministry of Agriculture for the Latvian SSR. Farms on which considerable territorial changes took place during 1977 were not included in the analysis.

For the sovkhozes studied during the 1976-1980 period, the average value of the fixed capital per average annual cow was 806 rubles and the value of the gross output per 100 rubles of fixed capital -- 80 rubles and for 100 rubles of payments for labor and amortization -- 325 rubles. Substantial differences exist among individual farms in the effectiveness of use of fixed capital. In this regard, a study of the more important factors exerting a decisive influence on the indicators for the effectiveness of use of fixed capital is of considerable interest. Priority attention should be given here to the capital supply level.

An analysis of the modern situation and the dynamics of capital supply for milk production testify to the fact that substantial progress has been achieved. However, the present level of capital supply cannot be considered as satisfactory. Studies have shown that great fluctuations exist in the capital supply level for milk production for individual farms and even for entire groups of farms. For example, during the 1976-1980 period, at 36 farms which were studied, the value of the fixed capital per cow amounted to 331 rubles and at nine farms of another extreme group -- 2,158 rubles, that is, greater by a factor of 6.5. The difference among individual sovkhozes in the supplying of capital can range as high as a factor of ten. In the process, as experience has shown, growth in capital supply does not always lead to high results being obtained. For example, the production of goods per 100 rubles worth of fixed capital and per 100 rubles of wages and amortization turned out to be higher on farms having a low capital supply. On the whole however, an increase was noted in labor productivity on milk production farms which converted over from groups having a low to groups having a high level of capital supply.

Thus, with an increase in the amount of fixed capital per cow from 331 in the first group to 2,158 rubles in the ninth, the labor intensiveness for the annual servicing of a cow decreased by 4.5 percent and on farms of the first group it amounted to 154 man-hours and on farms of the ninth group -- 148 man-hours (average for all sovkhozes studied -- 147 man-hours). The direct labor expenditures per quintal of milk for the extreme groups of farms decreased by 17 percent and amounted to an average of 4.9 man-hours for all of the farms. It is not possible to determine in a simple manner the optimum ratio between growth in capital supply and labor productivity. But it is obvious that for an increase in the expenditures of past labor by a factor of 6.5, a reduction in the expenditures of live labor of only 4.5 percent is extremely inadequate.

Beyond any doubt, considerable importance is attached to the fact that growth in capital supply is associated to a large degree with increased construction costs. A minimum increase of 50 percent in specific expenditures can be caused by elements which do not produce economic results for agriculture. In addition, growth in capital supply took place mainly as a result of an increase in the so-called passive portion of the fixed capital and this did not exert any substantial effect with regard to raising labor productivity.

The high degree of labor intensiveness involved in the servicing of livestock on many farms is explained by the inadequate level of all-round mechanization of production processes. The mechanization of individual labor processes does not produce the same effect achieved from all-round mechanization. At the end of 1978, all-round mechanization was to be found on only 26.4 percent of the farms in Latvia. The level of all-round mechanization is inadequate on dairy farms which have a low degree of capital supply -- here all-round mechanization has reached only 65 percent. At the same time, it bears mentioning that in the absence of improvements in the organization of labor and production on the farms the introduction of all-round mechanization produces only negligible results. This is borne out by the following example.

At the Shkive Sovkhoz in Dobel'skiy Rayon the capital supply per cow is 2,782 rubles. The dairy cattle are maintained in a newly built highly mechanized

dairy complex. In 1980, the labor expenditures for servicing one cow amounted to 133 man-hours. Scientific studies and experimental data testify to the fact that with all-round mechanization of the production processes the annual labor expenditures per cow will amount to only 84-88 man-hours, that is, 34 percent less. In this instance there is a considerable difference between the potential and actual effect of the capital supply level with regard to raising labor productivity.

At the same time, failure to utilize fully the available production capabilities is also of importance with regard to raising labor productivity. On many farms the newly built complexes are not being staffed fully with cows. The dairy cattle are being maintained in old and poorly mechanized facilities and thus for all practical purposes no improvements are being realized in the technical equipping of the branch.

It should also be mentioned that the placing in operation of a new and well organized complex does not always lead to an increase in the productivity of the cows. The conditions created for maintaining livestock can lead to an increase in output volume, but the additional resources invested must be reinforced by the carrying out of a number of other measures associated with the intensification of the branch: improvements in the feeding of the animals, the quality of tending them and the carrying out of breeding work with the herd. Actually, the livestock maintenance conditions created on many farms do not satisfy these requirements. As a result, even with an increase in the capital supply the productivity of the animals remains almost unchanged, with annual average fluctuations on the order of 2,954-3,046 kilograms. It was only in a group of farms having the greatest capital supply that the milk yield per cow turned out to be 16 percent higher.

With an increase in the degree to which the branch is supplied with fixed production capital, by groups of farms, a trend is observed towards an increase in the production cost for a quintal of milk, mainly as a result of growth in amortization deductions. The average production cost per quintal for all farm groups is 21.5 rubles, with fluctuations ranging from 20.9 rubles in the group of farms having the lowest level of capital supply to 23.1 rubles in the group with the highest level.

A more detailed analysis indicates that the annual farm expenditures for the amortization of fixed capital per cow increased from 33 to 88 rubles. At the same time, the wage expenditures by farm groups characterized by growth in capital supply decrease to a negligible degree, with even an increase in these expenditures being noted on some farms (in connection with a high wage level). The overall expenditures for wages and amortization per cow are 64 rubles or 1.35 times higher than those for leading farms and per quintal of milk -- 1.01 rubles or 16 percent higher.

The above-mentioned figures once again confirm the well known conclusion that a high amount of amortization deductions can be compensated for only by means of a considerable increase in the productivity of the livestock.

The failure to make proper use of newly introduced fixed capital exerts an adverse effect on the production costs for milk production, since the

amortization deductions are carried out independent of the use of the capital. Thus, during 1979 at the Kratse Sovkhoz in Rezeknenskiy Rayon, a dairy complex for 424 cattle billets was utilized to only 70 percent and the amortization per cow amounted to 220 rubles, or 67 more rubles than if full use had been made of the complex.

The overall total of wages and amortization deductions is affected to a certain degree by shortcomings and inaccuracies in the accounting for production expenses on a number of farms.

First of all, the farms are tolerating deviations from the established system for considering the labor expenditures for certain categories of animal husbandry workers as direct and indirect expenditures. This is borne out by the differences in the ratio between the direct and overall (direct + indirect) labor expenditures, which at the farms studied amounted to 1:1.3-1:2.5.

Secondly, inaccuracies exist in accounting for amortization deductions. When determining the annual amortization total for practically identical production installations on the farms, use is made of different deduction norms. Thus, during 1980 at the Zebrene Sovkhoz, for a balance value of 874,000 rubles in fixed capital in dairy cattle husbandry, 97,000 rubles were deducted for amortization purposes and at the Priyekule Experimental-Breeding Station, where the value of the fixed capital is roughly the same -- only 25,000 rubles.

It is understandable that such accounting inaccuracies affect the total wage and amortization payments, the overall annual production expenditures and also the indicators for the effectiveness of use of fixed capital and live labor.

With growth in the capital supply by farm groups, a trend is being observed towards a deterioration in the indicator for the effectiveness of use of fixed capital and live labor: a disparity between the rates of growth for labor productivity and the capital-labor ratio and also a disparity between the rates of growth for output production and capital supply for the branch.

In this regard, the solving of the problem concerned with raising the effectiveness of use of fixed capital under conditions involving growth in capital supply for the branch must proceed, in our opinion, along the lines of increasing the production of goods and lowering the labor intensiveness of operations. The most important factors for promoting an increase in the production of goods and raising labor productivity are: capital-supply for the branch, feeding and productivity level for the livestock and production concentration and specialization.

A qualitative analysis carried out using materials based upon a grouping of farms according to the fixed capital value per cow revealed an absence of clear associations between the capital-supply level on the one hand and the indicators for labor productivity and livestock productivity on the other. This conclusion is confirmed to a large degree by data obtained from correlative analysis. In accordance with the totality of farms studied, the coefficient of correlation between expenditures for the production of 1 quintal of milk and the branch's capital-supply level equals 0.125, the coefficient of determination -- 0.016 and the coefficient of regression -- 0.0003. This signifies that at the present time 1.6 percent of the change in the labor

productivity level is associated with the capital-supply factor and that an increase in the capital-supply level of 100 rubles per cow is accompanied by a reduction in labor expenditures of 0.03 man-hours.

Considerable interest is being displayed in a quantitative description of the link existing between capital-supply and the productivity level of the livestock. The coefficient of dual correlation in this instance equals 0.118 and the coefficient of determination -- 0.014. Thus a cow productivity of 1.4 percent is determined by the branch's capital-supply level. A coefficient of regression of 0.116 indicates that productivity is raised by 11.6 kilograms as the capital-supply increases.

The low values for this link are explained by the fact that when the livestock are not supplied adequately with feed, feeding becomes a definite factor for raising the productivity of the cows. Such feeding lowers the degree of influence of other production factors, including the effect generated by capital-supply.

In conformity with the scientifically sound feeding norms for livestock, the expenditure of feed per cow for an average annual milk yield of 3,200-4,000 kilograms must be no less than 41-45 quintals of feed units annually. Actually, the average amount expended on farms in the Latvian SSR during the 1976-1980 period was 36.2 quintals of feed units, 3.3 percent more than the figure for the ninth five-year period and 7.3 percent more than the eighth five-year period. The rates of growth for supplying the dairy herd with feed are inadequate and do not meet the requirements for further development of milk production. During the period studied, the effectiveness of use of feed was lowered to a certain degree. Although the expenditure of feed per cow during the 1976-1980 period increased by 7.3 percent compared to the 1965-1970 period, the average annual milk yield during this same period increased by only 5.7 percent.

The feeding level for the cows and also the effectiveness of use of feed on the farms fluctuate considerably. On the average for the farms studied, 36.9 quintals of feed units were consumed per cow during the 1976-1980 period. This indicator fluctuated from 24.3 to 49.8 quintals of feed units for the extreme groups of farms. The analysis carried out on the data from the grouping reveals that full-value feeding exerts a decisive influence with regard to raising the productivity of the livestock, increasing output and lowering the prices for the products and it makes it possible to raise considerably the efficiency of milk production. On farms in the 1st through the 8th group, the consumption of feed per cow increased by a factor of 1.8, the average milk yield was raised by 1,674 kilograms (71 percent), the production cost per quintal of milk was lowered by 4 percent and labor expenditures for its production -- by 43 percent.

The mathematical processing of the data obtained from the grouping indicates that a feeding level of 74 percent for the total number of farms studied defines a change in the average annual milk yield (coefficient of correlation equals 0.862). An increase in the annual consumption of feed per cow of 1 quintal of feed units is accompanied by an increase accordingly in the milk yield of 67.4 kilograms (coefficient of regression equals 67.4).

Cow productivity is the chief indicator for production efficiency and also for the use of the fixed productive capital. An increase in the average annual milk yield per cow from 2,226 to 3,952 kilograms, or by a factor of 1.8, is accompanied by a reduction in the production costs for the products of seven percent and by growth in labor productivity of 42 percent. The total amount of profit obtained per cow by farm groups increases by a factor of 8.4: from 24.9 to 209.9 rubles, with its average level for all sovkhozes studied being 104 rubles.

It is obvious that an increase in productivity is a prerequisite for achieving a higher level of labor productivity. In the process, a high level of labor intensiveness for output is not excluded, while at the same time a high level of labor productivity is possible even in the event of low cow productivity. For example, at the Rushona Sovkhoz during the 1976-1980 period, for an average annual milk yield of 3,500 kilograms, the labor expenditures per quintal of milk amounted to 6.1 man-hours and at the Alsviki and Strautini Sovkhozes, for average annual milk yields which were lower than 2,500 kilograms -- 4.4 and 4.6 man-hours respectively.

Nevertheless, in connection with the total number of farms studied, the interrelationship between the productivity of the animals and labor productivity was rather clear. This was pointed out by the data obtained from correlative analysis. In the equation prepared for dual correlation  $y = 9.611 - 0.0015 \cdot x$ , the relationship between cow productivity and labor productivity is described by the following values: dual coefficient of correlation equal to 0.598, partial coefficient of determination equal to 0.358 and the coefficient of elasticity equal to 0.88.

An increase in the economic efficiency of agricultural production, with an increase taking place in its capital-supply, is closely associated with farm specialization and concentration of production operations. More intense specialization and increased production concentration and increasing production to the optimum amounts so as to satisfy the organizational and technological requirements are promoting increases in the production of goods with minimal labor and material expenditures and also improvements in profitability and in the effectiveness of use of the fixed productive capital.

Farm specialization in the production of a particular type of product creates an opportunity for concentrating labor and material resources in many production sectors. As a result, the leading branches are developing at accelerated rates and this is leading to a reduction in material, labor and monetary expenses per unit of product produced.

An increase in the number of livestock on the farms, assuming that their normative requirements for feed are being met, is promoting improvements in the quality of the work being carried out in connection with the feeding, maintenance and tending of the animals. This is having a beneficial effect on raising their productivity.

The consolidation of animal husbandry farms is creating favorable conditions for introducing progressive means for mechanization and automation, for ensuring that this equipment is employed to the maximum possible degree and for raising the norms for the servicing of the livestock.

In order to study the effect generated by the level of specialization on the efficiency of milk production, a grouping of farms was carried out according to the amount of earnings from the sale of milk, compared to the overall volume of marketable products. An analysis of the data obtained from this grouping indicates that the farms studied are not profiting fully from the advantages offered by specialization in the production of milk. As the level of farm specialization in the production of milk is raised, improvements do not always take place in the branch's indicators, including the indicators for livestock productivity and labor productivity. Conversely, comparatively better indicators are being achieved on farms where up to 30 percent profit is being realized from the sale of milk. The results decline when the proportion of milk in the marketable output is increased. Whereas on farms where milk occupies up to 19.9 percent of the marketable output the fixed productive capital of an agricultural nature per 100 hectares of agricultural land is 159,600 rubles, gross agricultural output per 100 hectares of cultivated land is 83,900 rubles and per 100 rubles of fixed capital -- 52,500 rubles and the profitability level -- 26 percent, then on farms where the proportion of milk in the marketable output is 40 percent or more, these indicators are equal respectively to 113,600 rubles, 45,000 rubles, 39,000 rubles and 11.4 percent, with averages for the totality of data of 128,000 54,300, 42,200 rubles and 18.1 percent. The data of correlation analysis testifies to the adverse effect generated by an increase in the level of farm specialization in milk production on production efficiency in the given branch. With an increase of 1 percent in the proportion of milk in the overall volume of marketable output, the average annual milk yield decreases by 19.8 kilograms and labor expenditures per quintal of milk are increased by 0.16 man-hours.

Analysis reveals that increased farm specialization in the production of milk takes place mainly by means of the extensive rather than the intensive method, that is, by increasing the number of cattle and not the productivity of the animals. On many farms the availability of feed is lagging behind the increases taking place in the number of animals and, as a result, the productivity of the animals and other economic indicators for the production of milk are low. Thus, on farms in the latter group, where 37 percent more cows are being maintained per 100 hectares of cultivated land than on farms having a lesser density of cows, 24 percent less feed is being consumed per cow.

Such a situation is explained to a large degree by the fact that over an extended period of time, taking into account the procurement price level established earlier and the high production expenditures, the production of milk at a majority of the sovkhozes and kolkhozes was either only slightly profitable or even unprofitable. Thus the overall profitability of the farms has decreased as they have participated more in specialization in the production of milk. To a large degree, this has eliminated the possibility of raising the level of management and improving the material conditions for milk production.

The mentioned conclusion is confirmed by the fact that on many farms, in the marketable output structure in which the proportion of milk is high, the logistical base for its production is developed to only a weak degree. Thus the cattle at the Stalbe Sovkhoz are disposed at 17 points and at the Drusty

Sovkhoz -- at 16 points, with the average capacity of one cattle yard being 67 and 52 cows respectively.

Increased specialization must be linked to the creation of an appropriate feed base and with improvements in the material conditions for production. On farms where these requirements have been observed, the advantages of specialization are being manifested.

The effectiveness of the branch is being influenced by the degree of production concentration, which is characterized by the number of cows and by the gross output yield of dairy cattle husbandry (in a cost measurement) per individual farm. The analytic data indicates that an increase in the number of cows and in the volume of products produced per farm has a positive effect on improving the productivity of the cows, lowering the production costs for the products and raising labor productivity.

An increase in the density of the number of livestock promotes an increase in the average annual milk yield, growth in labor productivity and a reduction in the production cost for the milk, provided the number of cows per 100 hectares of cultivated land is 25 or more. The density of the cattle also describes the level of branch intensification. As this density rises by groups of farms, increases also take place in the other indicators of intensification, such as capital-supply and the level of feeding. However, even in this instance, not all of the farms which have large cattle densities have achieved fine results. For example, at the Skuyene and Gayzinysh Sovkhozes which have high densities, the average annual milk yield per cow was 2,449 and 2,658 kilograms respectively and labor expenditures for the production of 1 quintal of milk amounted to 5.5 and 6 man-hours. The feed base and also the material base for the production of milk are insufficiently developed at these farms.

The implementation of a complex of measures which include scientifically sound planning of the requirements for fixed productive capital and raising the material interest of the collectives of production subunits of kolkhozes and sovkhozes in their utilization will make it possible to raise sharply the return from resources invested in social agricultural production throughout the republic and will promote the fulfillment of the tasks of the 11th Five-Year Plan.

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AGRO-ECONOMICS AND ORGANIZATION

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DEVELOPMENT OF SUBSIDIARY ENTERPRISES IN MEAT INDUSTRY COMBINES

Moscow MYASNAYA INDUSTRIYA SSSR in Russian No 3, Mar 83 pp 40-42

[Article by I. I. Fedorus and A. K. Bakanov, USSR Ministry of the Meat and Dairy Industry: "The Development of Subsidiary Farms of Enterprises of the Branch"]

[Text] The USSR Food Program, developed for the period up to 1990, notes that along with the organization of highly intensive hog raising on industrial farms and complexes, it is necessary to realize more fully the possibilities of increasing pork production on subsidiary farms of enterprises and organizations and on private farms of the citizens. This is an important factor in improving the provision of public catering enterprises with meat and vegetables.

Implementing the decisions of the party and government, the USSR Ministry of the Meat and Dairy Industry as well as republic ministries and associations are working to create and develop subsidiary farms at enterprises and to increase the production of agricultural products on them.

This work has been organized best in the ministries of the meat and dairy industry of the RSFSR, the Kazakh SSR, the Lithuanian SSR, the Uzbek SSR and the Azerbaijan SSR.

At the present time subsidiary farms have been created in practically all union republics and all-union industrial associations.

Subsidiary farms are being created and developed most successfully at large and medium-sized enterprises of the meat industry which have sufficient material and human resources. At the present time 347 of these farms have been created, and they annually produce more than 3,000 tons of meat, 200 tons of milk, 700 tons of vegetables, about 1,200 tons of potatoes and other agricultural products.

During 1981-1982 subsidiary farms of enterprises of the meat industry obtained and delivered to public catering more than 6,000 tons of meat, 450 tons of milk, 1.3 tons of vegetables, 2,000 tons of potatoes and other products.

In terms of the creation and development of subsidiary farms, the experience of the Tatar production association of the meat industry (general director--Kh. A. Rakhmatullin) is interesting. This association developed a program which envisions intensively increasing meat production on subsidiary farms so as to fully satisfy the enterprise's need for public catering. In the program, which is to be implemented during the course of several years, each enterprise is given a concrete assignment and is given assistance with the necessary materials: problems of financing the creation of subsidiary farms have been solved and responsible workers from the association are assigned to each combine.

As early as 1980 hogs were being fattened on 7 meat combines of the association and during the course of the year 84 tons of meat (in live weight) were sent from the subsidiary farms to public catering.

The meat production is relatively inexpensive. In 1981 the production cost of 1 quintal of weight gain amounted to only 85 rubles, 42 kopecks, and in 1982--about 90 rubles. The high average daily weight gains of hogs on fattening are provided through the organization of full-value feeding of animals and the observance of zootechnical norms for maintaining them.

Subsidiary farms of the Bugul'minskiy, Brezhnevskiy, Sviyahskiy, Shemardanskiy and other meat combines of the association, along with fattening hogs, raise large horned cattle, vegetables and potatoes. The Bugul'minskiy meat combine has constructed a hothouse with an area of 600 square meters and a vegetable storage facility, and it is planned to construct hothouses at other meat combines.

The subsidiary farm of the Kazanskiy meat combine is developing successfully (director--V. V. Kusov). By an order from the enterprise it was created on an equal footing with an agricultural shop. The planned number of workers was established and measures were developed for their moral and material incentives, in which the main criterion was the quantity and quality of final products obtained with reduced expenditures.

The enterprise was allotted 2.5 hectares of utilized land which was plowed and cultivated and planted in potatoes, vegetables and feed crops. Taking into account the garden plot with an area of 0.8 hectares, the overall area of land of the enterprise's subsidiary farm amounted to 3.3 hectares.

The fattening of hogs on the subsidiary farm of the Kazanskiy meat combine was organized in a re-equipped poultry yard; at the same time up to 300 animals are fattened in the hog yard. A hothouse with an area of 600 square meters was recently put into operation. Early vegetables are grown in it.

Workers of the enterprise who are interested in increasing the production of agricultural products help the collective of the subsidiary farm to perform labor-intensive agronomical and zootechnical work. A certain section of the subsidiary farm has been assigned to each shop of the meat combine. The workers of the meat and fat shop repair and disinfect the premises and weigh the animals. The collective of the sausage shop helps to raise and harvest

potatoes and vegetable crops, to cultivate orchard crops and to gather the harvest of fruits and berries. Workers of the plant administration and other auxiliary services have been assigned all work related to raising early vegetables in the hothouse. This experience of the workers of the Kazanskiy meat combine deserves widespread dissemination.

For feeding the hogs the enterprise uses broths, fat, nutritive supplements, food scraps and so forth. Including wastes in the ration for fattening hogs makes it possible to obtain pork whose production cost does not exceed 71 rubles, and the average daily weight gain of hogs on fattening amounts to more than 600 grams. In 1982 the subsidiary farm obtained about 50 tons of meat in live weight and 6 tons of vegetables that were raised in hothouses.

In 1983-1985 it is intended to further increase the production of agricultural products. Reconstruction has been started on a hog sty which will accommodate 500 animals, and maintenance facilities and a feed kitchen are being created. It is intended to construct another hothouse with an area of 1,000 square meters and it is planned to assimilate another 1 hectare of unutilized land, which will make it possible to increase the amount of feed crops and vegetables that are raised.

A large amount of planned work for creating and developing subsidiary farms is being done at the Arkhangelsk production association of the meat industry (general director--V. V. Freymen), where they are being organized at all meat combines. Each year public catering receives more than 50 tons of meat (in live weight) from these farms, and more than 500 piglets are sold to the workers and employees to be raised on private farms.

The facilities for maintaining the animals, the feed kitchens and other facilities are equipped through the efforts of the enterprises. For example, the subsidiary farm of the Plesetskiy meat combine is located on its cattle base which is outside the territory of the combine. The combine's workers have reconstructed and repaired the premises for maintaining the animals and have equipped a feed kitchen.

The meat combine purchases hogs for fattening on the subsidiary farm from farms of the rayon. Table scraps, potatoes, dry vegetable and animal feeds, broths and so forth are used for fattening the animals. In 1981 the meat combine purchased 17 tons of potatoes from the population for fattening the hogs, and in 1982--more than 13 tons. Up to 15 tons of dry vegetable and animal feeds are produced each day.

The farm obtains high average daily weight gains: in 1980 they obtained 550 grams of weight gain from each animal each day, and in 1982--up to 600 grams of weight gain.

Each year the subsidiary farm of the Plesetskiy meat combine increases meat production and therefore, in addition to meat for its own consumption, it sells it in the form of semimanufactured products on orders from the workers. Thus the annual demand for meat for the dining room is 6 tons and the enterprise's subsidiary in 1982, for example, obtained more than 13 tons of it.

The Plesetskiy meat combine was awarded a certificate of the AUCCTU for the successes achieved in the development of the farm.

In 1983 the enterprise's collective plans to construct a hog sty through its own efforts, so as to expand the raising and fattening of hogs.

The Kazakh SSR was one of the first to create subsidiary farms at enterprises of the meat industry. At the present time 25 of the republic's 29 meat combines have subsidiary farms. Subsidiary farms are developing successfully at the Alma-Ata production association of the meat industry and the Dzhambul meat combine.

The subsidiary farm of the Alma-Ata production association of the meat industry (general director--A. M. Avdeyev) was organized in 1978 as part of the Alma-Ata meat combine. This farm has about 200 hectares of agricultural land on which they annually plant grain, feed, vegetable and melon crops. For example, in 1982 115 hectares were planted in grain crops and 40 hectares in feed, vegetable and melon crops.

Additionally, the subsidiary farm of the association raises fruits and vegetables on 10 hectares. In 1982 they harvested 15 tons of apples, apricots and other fruits, and 5 tons of vegetables.

In a greenhouse with an area of 100 square meters they raise cucumbers, tomatoes, onions and flowers. The greenhouse produces more than 3 tons of fresh vegetables a year.

Each year the subsidiary farm of the Alma-Ata production association produces up to 200 tons of meat in live weight. Each year one worker receives an average of more than 27 kilograms of meat. The existing agricultural land cannot fully provide the farm with feeds from its own production.

Therefore slaughter house wastes, broths, the contents of intestines, food scraps and other feeds are used to feed the hogs.

The average daily weight gain of hogs on fattening is 520-530 grams. The best hog raisers, V. V. Skubihev and L. P. Gurskaya, receive 550-560 grams of weight gain per day.

The association's subsidiary farm provides all the meat for public catering, and the meat that is left over is sold to the state or to the employees and workers in the form of semimanufactured products.

Guided by the decisions of the May and November (1982) Plenums of the CPSU Central Committee, the association's collective has developed a comprehensive plan of measures for developing subsidiary farming up to 1990. This plan envisions, in particular, using USSR Gosbank credit to construct hog sties for 4,000 hogs, rabbit and sheep farms--for 1,100 and 1,000, respectively, and also a hothouse with an area of 500 square meters for raising early vegetables.

Because of the shortage of young animals for fattening the farm purchases sows and organizes its own reproduction. Under the Eleventh Five-Year Plan the subsidiary farm of the association intends to obtain 9,000 piglets and 11,700 rabbits by reproducing them itself, to fatten 37,000 hogs and to obtain 1,600 tons of meat in live weight. By the end of the five-year plan it is planned to increase meat production to 240 tons a year in live weight, which will amount to 33 kilograms for each worker.

The subsidiary farm of the Dzhambul meat combine (director--Zh. Suleymenov) was organized 35 kilometers away from the Dzhambul meat combine on the basis of three empty animal husbandry facilities and a residential building. They allotted 5 hectares of arable land for raising feed crops. In order to provide the subsidiary farm with the necessary feeds, the enterprise organized the gathering and utilization of food scraps for fattening the animals.

The nutritive value of 1 kilogram of food scraps amounts to an average of 0.2-0.25 feed units and contains 10-15 grams of digestible protein, 2-2.5 grams of calcium and 1.5 grams of phosphorus, and 1 ton of feed units from food scraps is considerably less expensive than concentrates. This makes it possible for the subsidiary farm to develop without increasing the area of land that is used. In 1980 the farm sent 35 tons of meat to public catering, in 1981--50 tons and in 1982--55 tons.

The plan of comprehensive measures envisions expanding the fattening of animals and increasing the production of meat to 65 tons by 1985 and 75 tons by 1990.

In 1982 the farm purchased 20 bee colonies, from which it obtains 400-500 kilograms of honey. In 1983 it is planned to increase the number of bee colonies and gather 1,000-1,200 kilograms of honey.

On the whole the subsidiary farms at enterprises of the meat industry are developing stably. There is an increasing number of farms that provide all or 40-50 percent of the meat and vegetables for public catering at the enterprises. Certain enterprises devote special attention to developing the feed base for subsidiary farms, which makes it possible to raise animals mainly on feeds that they produce themselves. In particular, all subsidiary farms of the Lithuanian SSR Ministry of the Meat and Dairy Industry have plots of land averaging 60 hectares in size. On this land they regularly conduct the necessary agro-technical measures which makes it possible to obtain good yields of grain and feed crops.

From an area of more than 350 hectares of grain crops the farms gather 550-580 tons of grain, that is, the productivity exceeds 20 quintals per one hectare.

More than 800 hectares on the farms are planted in feed crops, and more than 40 hectares in potatoes and vegetables.

Because of the development of the feed base of the subsidiary farms, all of the feeds for fattening hogs are provided through internal production. Each year the subsidiary farms of the ministry receive more than 60 tons of pork in live weight. More than 20 tons of potatoes, 80 tons of vegetables and other agricultural products also go to the dining rooms.

The advanced practice of enterprises of the meat industry of various republics shows that by utilizing existing reserves it is possible in a short period of time to organize the production of meat and other agricultural products in order to improve the food service for the workers.

If there is no possibility of organizing their own subsidiary farms, the enterprises create them on the basis of cooperation. Thus the Yoshkar-Olinskiy meat combine in conjunction with the vitamin plant has constructed a hog farm, acquired sows and organized reproduction and fattening of the animals. The enterprises distribute the meat that is obtained according to the shared participation.

Good results in the development of subsidiary farms are achieved at those enterprises where questions of the subsidiary farms are regarded on a level with the basic production. For example, the collectives of the enterprises of the Vinnitsa production association of the meat industry (general director--N. I. Uperchuk), in addition to increasing the output of meat products and increasing the efficiency of production, must create subsidiary farms at all enterprises and fully provide meat and vegetables for public catering by 1985.

The commitments that have been made are being successfully carried out. At the present time subsidiary farms have been created at all meat combines. Free production premises of sovkhoz divisions have been used for organizing fattening of animals at the Vinnitsa, Gaysin and Tulchin meat combines.

The Trotyanets meat combine has organized fattening of hogs in hog facilities constructed through their own funds. The Gaysin, Tulchin and Kazatin meat combines have constructed hothouses for raising early vegetables. In 1983 hothouses will be constructed at the other two meat combines of the association.

At the request of the association, the enterprises have been given plots of land of from 5 to 10 hectares on which they raise feed crops. Some of the grasses that are raised are processed into grass meal and then sold to the state in exchange for mixed feeds. For fattening animals they use mainly food scraps and wastes from the meat and dairy industry.

In 1982 the farms produced 80 tons of meat in live weight. By 1985 meat production on subsidiary farms of the Vinnitsa production association of the meat industry is to increase to 36 kilograms per worker, which will make it possible to provide all the necessary meat for public catering.

In order to develop socialist competition at existing subsidiary farms and to stimulate further organization of subsidiary farms, the USSR Ministry of the Meat and Dairy Industry and the central committee of the trade union of food industry workers have declared a review-competition, "For the Best Subsidiary Farm and Increased Production of Agricultural Products in Order to Improve the Supply of Food Products for Workers and Employees of the USSR Meat and Dairy Industry."

The farms that win the review-competition will be awarded certificates of honor with monetary bonuses and passenger vehicles will be allotted to sale to the production leaders.

In keeping with the decisions of the May and November (1982) Plenums of the CPSU Central Committee, in order to provide the workers with more agricultural products, the ministries of the meat and dairy industry of the union republics of the production associations of the meat industry are to take additional measures to create more subsidiary farms and develop existing ones.

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## TILLING AND CROPPING TECHNOLOGY

### INSTRUCTIONS FOR WINTER CROP CARE IN BELORUSSIAN SSR

Minsk SEL'SKAYA GAZETA in Russian 19 Mar 83 p 2

Article by I. Bogdevich, director of BelNIIIPA; A. Osin, department head at BelNIIIZ; S. Guga, head of a laboratory at BelNIIZR and A. Korobach, chief of the Main Administration for Farming of the Ministry of Agriculture for the BSSR: "Timely and High Quality Tending of the Winter Crops"/

Text At the present time, on the eve of the spring operations, the farmers have many concerns regarding the grain fields. At the same time, constant control must be exercised over the winter crop sowings. And this is quite understandable. The winter crops account for 40 or more percent of the gross production of grain. They occupy 1.43 million hectares throughout the republic.

The wintering of the crops took place under complicated agrometeorological conditions. The warm and overcast weather which prevailed during the autumn period precluded the possibility of the plants receiving additional hardening. In those areas where there was no snow cover, the plants were subjected to damage caused by low temperatures. In the northern and northwestern zones of the republic, an icy crust was observed on heavy soils on which winter crops had been sown.

The resumption of growth on certain days during the winter period and the positive temperatures which occurred during January and February, especially in the southern and southwestern portions of the republic, resulted in intensive respiration of the plants and a raised expenditure of sugars, the content of which was 2-3 percent lower than the average values established over a period of many years. Thus the agronomic service must control the intensive expenditures of sugars, by determining their content using the existing method.

The snow which fell on unfrozen soil promoted the development of snow mould, centers of which were observed in many regions throughout the republic. Data accumulated over a period of many years has shown that this disease causes the greatest harm on sowings in the northern and eastern regions of Vitebsk, Grodno, Minsk and Mogilev Oblasts. This spring snow mould was observed on winter crop sowings in Oshmyanskiy, Mogilevskiy, Bobruyskiy, Shklovskiy, Mstislavskiy, Krichevskiy and Cherikovskiy Rayons. In Vitebsk Oblast, where the principal winter crop tracts were treated with Fundasol, almost no snow mould was observed on the February monoliths.

The most important period during the wintering of the crops is the period when the snow thaws. Windy and sunny weather, the rapid disappearance of the snow and the onset of stable warm weather restrains the development of snow mould. Conversely, slow and prolonged thawing of the snow and cold weather with frequent fogs and precipitation in the form of wet snow promote the further development of the causative agent of this disease. Under such conditions, the status of the winter crops can change on a daily basis. Thus the agronomic service for the farms must exercise control in all areas over the condition of the winter crop sowings, especially on fields which emerged from under the snow in satisfactory condition. This requires a thorough inspection of each field, such that by the time growth resumes accurate knowledge is available on the extent and nature of the damage inflicted upon the plants and on the number of plants which perished. Such inspections will indicate the measures required for reducing the consequences of unfavorable wintering conditions and for obtaining the planned yields.

There are several agrotechnical methods for the early spring tending of winter crop sowings. First of all, peat dust (up to 2 tons per hectare) or potassium fertilizers (1-2 quintals) should be applied to the soil's surface. This will accelerate the thawing of the snow and the breaking up of the icy crust. This operation is best carried out during the morning hours, over the frozen snow crust, so as to avoid damaging the sowings. This method should be employed mainly on those tracts where there is a large amount of snow cover. As rapidly as possible, the stagnant thaw waters must be channelled along the ridges and canals. If there is dead plant bulk on the sowings, harrowing of the winter crops must be carried out during the morning hours on the frozen soil as the snow disappears -- this will reduce sharply the damage caused to the plants by snow mould.

The principal and most important method for tending winter crops in the spring is that of applying a top dressing of nitrogen fertilizer. According to data supplied by the republic's scientific research institutes, a spring top dressing of nitrogen, assuming the presence of other favorable growth conditions, will produce an increase in the yield of winter rye grain of 6-10 quintals per hectare and for winter wheat -- 12-16 quintals per hectare. Each year many kolkhozes and sovkhozes in Ostrovetskiy, Grodnenskiy, Korelichskiy, Molodechnenskiy and Nesvizhskiy Rayons are realizing high returns from fertilizer top dressings applied to their winter crops.

When commencing the work of applying a top dressing to the winter crops in the form of nitrogen fertilizers and in determining the norms and methods for applying them, one should take into account the peculiarities of the meteorological conditions of the autumn-winter period and the condition of the plants (extended period of growth owing to a warm autumn, a great expenditure of plastic substances, lowered winter hardiness and a weakened state for the plants). It should be borne in mind that a great amount of precipitation in February and early March, with simultaneous intensive infiltration can lead to great losses in mobile nitrogen, which accumulated in the soil as a result of autumn nitrification processes. This dictates the need for applying a nitrogen top dressing to all of the winter crop sowings without exception, to increasing somewhat the application norms and to carrying out the work more rapidly compared to previous years.

Experimental data has established that on the average the optimum dosage of nitrogen for winter crops, on sod-podzolic soils and under the conditions which prevail this year and taking into account the varieties under cultivation, is 70-90 kilograms for winter wheat and 60-80 kilograms for winter rye. However, in each specific case the average nitrogen fertilizer dosages mentioned require corrections which take into account the preceding crop, the quantity and quality of organic fertilizer already applied, the fertility level of the fields and so forth. In all instances it should be remembered that a deficit of nitrogen fertilizer restrains the growth of the plants and lowers their protein content. In the case of a surplus of nitrogen, the cropping power of the winter crops and the quality of the grain decrease sharply owing to lodging of the plants.

In determining the period for applying a spring top dressing to the winter crops, a preference is shown, based upon data accumulated over a period of many years, for the period during which plant growth resumes. This period is established by the appearance of small roots in the root system. Earlier top dressings are always attended by the risk of losing nitrogen in the amount of up to 15-20 kilograms per hectare, as a result of leaching into lower layers or being carried off with ground waters. The duration of the top dressing must not exceed 10 days.

The effectiveness of the nitrogen fertilizers used for top dressings will be greatly dependent upon the uniformity of their application. Studies carried out by the Belorussian Scientific Research Institute of Soil Science and agrochemistry have established the fact that irregular applications of nitrogen fertilizers, when applying top dressings to winter crops, lead to a shortfall of from 3 to 5 quintals of grain per hectare. In this regard, each kolkhoz and sovkhoz must display concern for the highly productive use of RTT-4.2 fertilizer distributors when applying top dressings. If there is a shortage of these machines, grain sowing machines can be employed providing the plowshares and seed tubes are removed in advance.

The agronomic and engineering service of farms and specialists attached to Sel'khozhimiya and the agricultural administrations of rayon executive committees must ensure strict control over the uniform application of fertilizers by machines having centrifugal spreaders or by aircraft. In the case of the latter, an efficient system of ground signalization must be organized so as to ensure the correct flight altitude. At the present time, with technological adjustments being carried out on the sowing and soil cultivation equipment in all areas, a requirement exists at each kolkhoz and sovkhoz for carrying out a thorough check on the correct working order of all units and mechanisms of each machine to be employed for applying fertilizers. In this manner the units will be prepared in a high quality manner for the spreading of fertilizer. The results of this adjustment work should be recorded in a special document, such that it will be easier to control the quality of the fertilizer application work out on the fields.

Ammonium nitrate is the best fertilizer for use in applying a top dressing to the plants. However, there will be a shortage of this chemical this year, a shortage which can be successfully compensated through the use of urea. When using urea for a top dressing, it should be borne in mind that an untimely application of it, either very early or late, and also during high temperatures,

leads to great (up to 30 percent) gaseous losses of nitrogen. Thus the application of a top dressing of urea to winter crops must be timed to coincide strictly with the commencement of plant growth; it should be applied using grain disk sowing machines and the slotting method or superficially with subsequent placement in the soil by means of harrowing. When ammonium sulphate is used as a top dressing, the side effects of this type of fertilizer must be borne in mind -- acidification of the soil. Thus ammonium sulphate is best used in behalf of winter rye, which is less sensitive to soil acidity and also on soils having a weak or neutral reaction. The spring harrowing of winter crops is a mandatory agrotechnical method for tending sowings on mineral soils and packing of the sowings -- on swampy soils.

In order to raise the resistance of the winter crops against lodging, all of the high-yield tracts of winter rye and wheat must be treated with growth regulators this year -- Campozin or TUR. These preparations are available at Sel'khozkhimiya storehouses in adequate quantities. The Campozin retardant is employed on winter crop sowings at the beginning of the stem extension phase in a dosage of 4 liters per hectare of sowing and TUR -- 6 kilograms per hectare. A high level of effectiveness is achieved on winter rye sowings when use is made of a mixture of 3 kilograms of TUR and 0.5 liters of Campozin per hectare.

In order to raise the resistance of winter wheat to lodging and also for combating weeds, it is recommended that a mixture of TUR with a herbicide of systemic action (4 kilograms of active TUR agent with the addition of a half dosage of the herbicide) be applied to the sowings during the tillering phase and prior to stem extension. The effectiveness of the mixture is equivalent to the use of each preparation in pure form and this makes it possible to lower the treatment expenses and it reduces the consumption of herbicides by twofold.

In addition, the treatment of high-yield sowings of winter crops with retardants makes it possible to apply raised dosages of nitrogen without having to fear lodging of the crops and it also makes it possible to obtain higher yields. It should be borne in mind that the nitrogen top dressings ideally should be supplied in two applications -- 60 kilograms early in the spring and the remaining portion -- 20 kilograms -- during the stem extension phase prior to earing.

The carrying out of the entire complex of measures associated with tending the winter crops during the early spring period will make it possible to achieve high yields for these crops. The agronomic service of the farms must solve these problems in an efficient manner, taking into account the specific situations and the condition of the crops.

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